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PASTURE MIXTURES
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PASTURE MIXTURES

1



An Improved Pasture; this mat of Subterranean Clover is building up the soil as well as feeding stock.

IF this article is read in conjunction with the descriptions of the different grasses and clovers given in the main part of this book, it will be easy to work out the best mixture for any particular situation and requirement. These recommendations are based on careful experiments and observations by Officers of the Agrostological Division of the Department of Agriculture, New South Wales, as set out in their various pamphlets to which much help is acknowledged, coupled with our own experiments drawn from trial ground field observations, and the results gained by our very large number of customers throughout the Commonwealth.

Each mixture comprises a set of varieties which will form the main basis, with a supplementary list to be used according to soil and climatic conditions. This supplement contains very important components of the mixtures, but the inclusion of each individual variety will depend on particular conditions.

No effort has been made in this article to indicate the use of any particular variety alone, such as Lucerne for grazing and cutting, Subterranean Clover on natural pasture, etc., as these points are covered in the descriptions of each grass and clover in the body of the book.

MIXTURE No. 1.

- 12 lbs. Perennial Rye
- 4 lbs. White Clover
- Italian Rye

Mixture No. 1 could be taken as a standard mixture for all high quality heavy country which retains the moisture well over the North, Central and South Coasts and Central Tablelands. Here the aim is to obtain predominantly Perennial Ryegrass—White Clover mixture. In good rainfall country where good feed is wanted the first winter include Italian Ryegrass 2 lbs.

In regard to Clovers, 2 lbs. Subterranean or 2 lbs. Red could be included, Subterranean if the climate is inclined to be rather dry in the summer, Red Clover in the good coastal areas. 1½-2 lbs. Lucerne would be an excellent addition for deeper soils, particularly if the climate is inclined to suffer dry spells. This mixture should be sown at the rate of from about 12 to 20 lbs. per acre according to climate and soil fertility. On high-class Coastal soils or in irrigation country, 20 lbs. per acre should be sown; as the rainfall becomes lighter and more erratic, say, 26-27 inches average, a minimum of 12 lbs. per acre, but this mixture should not be used unless the climate is sufficient to keep the paddocks green from about April till November-December.

MIXTURE No. 2.

- 4 lbs. Perennial Rye
- 6 lbs. Cocksfoot
- 1 lb. White Clover

MIXTURE No. 2—(Continued)

- 2 lbs. Subterranean Clover
- 1 lb. Lucerne
- Ball Clover
- Red Clover
- Paspalum

This mixture is more suitable than No. 1 for areas where reliance will be placed on late spring and early summer rains, particularly in the more northerly districts where early spring is inclined to suffer dry spells. It is also particularly suitable for country either a little too friable or light for a really good Perennial Ryegrass and White Clover sward. This mixture is based on Perennial Ryegrass, Cocksfoot, Subterranean White Clover. The other items should be added according to climate and situation. In drier situations, 1 lb. Ball Clover, 1 lb. Lucerne should be included either together or alone. In Central and Southern districts, 2-3 lbs. Subterranean Clover would be better than Red Clover. Where the climate is a comparatively moist one and some parts of the paddocks are inclined to be damp or hold the moisture for fair periods, 2-3 lbs. Paspalum should be included. In districts where the springs are a little too dry or the soil a little too light for Ryegrass, Mixture No. 3 should be substituted.

MIXTURE No. 3.

- 4 lbs. Phalaris
- 2 lbs. White Clover
- 2 lbs. Subterranean Clover
- Lucerne



What a good pasture should be; Clover and Grass in combination.

MIXTURE No. 3—(Continued)

This mixture is predominantly Phalaris; climatically it is suitable for sowing on the Tablelands, and Coastal areas.

Phalaris is a wonderful grass, very hardy and probably one of the best growers in the cold weather. It stands up to more dry weather than Perennial Rye Grass and of course does best on a highly fertile soil of good depth. When sowing this mixture it must be borne in mind Phalaris is slow to establish and very susceptible to competition from other grasses during the first year, so that where Phalaris is to be the main grass the other constituents of the mixture should be clovers and Lucerne only. In the Northern districts use White Clover at the rate of about 2 lbs., but as one goes South add Subterranean Clover, and in drier areas on the Northern Tablelands and Western Slopes, Lucerne is a good addition at the rate of 1-2 lbs. per acre.

MIXTURE No. 4.

- 2-4 lbs. Wimmera Rye
 - 2-3 lbs. Subterranean Clover
 - 2 lbs. Rhodes Grass
 - 2 lbs. Lucerne
- Giant or Blue Panic Grass

This mixture is the one for the good agricultural districts where the rainfall is a little too light for the true Perennial Grasses such as Perennial Ryegrass, Phalaris, etc., but is sufficient for good wheat growing and general cropping. By varying the constituents this mixture can be made suitable for almost any part of the Riverina and the Slopes west of the Dividing Range.

From the Riverina northwards to about the main Western Line and westwards to about the 20-inch average rainfall belt, the mixture should be predominantly a Wimmera Ryegrass-Subterranean Clover one. As the districts lie farther north more reliance should be placed on Lucerne, 1-2 lbs. Giant or Blue Panic Grass and Rhodes Grass. For predominant Wimmera Ryegrass-Subterranean Clover, the sowing should be made at the rate of about 2-4 lbs. Wimmera and 2-3 lbs. Subterranean Clover per acre. Great care should be given to see that the correct strain of Subterranean Clover for the district be used (see Subterranean Clover article). In areas where Lucerne should be sown it is better to leave out Subterranean Clover altogether, particularly as one goes North. In the more northerly areas, Wimmera Ryegrass should always be included particularly if the land to be sown is a heavy friable one. On the lighter soils more reliance should be placed on Giant

MIXTURE No. 4—(Continued)

or Blue Panic Grass. Where heavy summer rainstorms can be expected a good deal of reliance should be placed on Giant or Blue Panic Grass and Rhodes Grass. The latter is often difficult to establish but once a good strike is obtained it is very hardy and a great addition to the pasture. In our opinion, a good mixture of such nature would be 2 lbs. Wimmera, 2-3 lbs. Rhodes, 1-2 lbs. Giant or Blue Panic and 1-2 lbs. Lucerne.

MIXTURE No. 5.

- 15 lbs. Italian Rye
- 4 lbs. Perennial Red Clover
- Wimmera Rye
- Prairie Grass
- Subterranean Clover

Is a temporary pasture for sowing down on cultivated land to last one to three years. On Coastal areas where the land is good, Italian Rye and Red Clover alone at the rate of 20-25 lbs. per acre will give marvellous grazing.

In high rainfall areas of good country where the pasture is to be a temporary one, the addition of a few pounds per acre of Prairie Grass and Wimmera Rye will give very heavy Winter and Spring grazing of high quality, milk producing feed. In such cases if the pasture is to be ploughed up before mid-summer, Red Clover could be left out.

As the districts lie farther West of the Coast, and the rainfall becomes lighter, 3-5 lbs. Wimmera Ryegrass should be gradually substituted for Italian Rye and 2-3 lbs. Subterranean Clover, for the Red and other clovers until one gets on to the Western Slopes where a good temporary mixture would be 6-10 lbs. Wimmera Rye and 3-4 lbs. Subterranean Clover. To get the best from this mixture it should be let go for 2-3 years, then cropped for 1-2 years, when the stubble should revert to a Wimmera Ryegrass-Subterranean Clover pasture quickly without any re-sowing.

MIXTURE No. 6.

- 10 lbs. Paspalum
- 2 lbs. White Clover
- Perennial Rye
- Rhodes Grass
- Italian Rye

This mixture is primarily most suitable for breaking in new Coastal country where the seed is generally sown on bush burn. On hilly country the mixture should include 6 lbs. Paspalum and 4 lbs. Rhodes Grass, and if on second-class country 4-6 lbs. Rhodes Grass with White Clover would be most suitable. For good country which has been previously cleared and ploughed up, Paspalum and White Clover with the addition of a few pounds per acre of Perennial Rye and possibly Italian Rye would make an excellent mixture.

MIXTURE No. 7.

- 2-4 lbs. Mitchell Grass
- 1-2 lbs. Giant or Blue Panic
- 1-3 lbs. Lucerne

On the North and Central Plains and drier slopes, Lucerne with the addition of Giant or Blue Panic has been proved most successful, except on rich, heavy Plain country where Mitchell Grass grows well. This mixture requires summer rains and is usually most suitable for more Northern districts of New South Wales and Western Queensland.

CERTIFIED SEEDS

3

Government Certified Strains are available in a number of lines of Grasses and Clovers, and Progressive Buyers are rightly asking for these lines; but it is important for everybody to know just what "Government Certified" means. Government Certificate Sealed Seed is seed certified by a Department of Agriculture to be a certain strain after due investigation, and the bags are sealed so that the buyer will know that he is getting the seed originally certified. Most Certificates (but not all) are given only if the seed at the time it is sealed shows over the minimum standard of purity and germination allowed by various Seed Acts. This gives no protection to the buyer that the seed is good when it is eventually bought by the man who is going to sow it, as for one thing no matter what happens to the germinating quality of the seed it remains Sealed and Certified.

Certified Perennial Ryegrass will be sealed and certified if when it is tested immediately after harvest it grows only 65% or 70%; although it is well known that Ryegrass of such a low germination may easily become useless owing to poor growth in a comparatively short time.

All certification schemes are not the same, even for the same variety of seed, and in many minds there is quite an element of doubt as to whether some schemes are as good as others.

There are many different grades and types of the one variety of seed certified, and it requires an intimate knowledge to know and evaluate the different grades.

It will be realised that although the sealing and certification of seeds is a very valuable facility for many purposes, absolute reliance cannot be placed on it for the valuation of seeds, and purchasers who are content to accept seed from any source provided it is described as "Government Certified" are risking failures and disappointments. Cheap Certified Seed can give just as poor results as the cheapest uncertified seed.

It is therefore essential to deal with a reliable Seed House with a name for Reliability, and with the backing of many years' experience in the selecting, handling and testing of pasture seeds of all kinds.

PASTURE GRASSES

PERENNIAL RYEGRASS

(*Lolium Perenne*)

Perennial Ryegrass growing well under suitable conditions is undoubtedly the finest pasture that could be had, and a sward based on these plants will stand up to heavy continuous stocking better than anything else. Indeed, in New Zealand it has been said that a good Ryegrass-White Clover pasture is not in proper shape until it will carry not less than five sheep per acre per annum.

To thrive, Perennial Ryegrass must be grown on highly fertile soils containing plenty of nitrogen. This means that Ryegrass to be a success must be grown in combination with a good well-balanced sward of clover, which will keep the Ryegrass properly supplied with the essential nitrogen.

To-day, good perennial strains of Ryegrass seed are generally available and the main factor in the success of a pasture is the successful combination of Ryegrass and a clover. The two clovers which are outstandingly successful with Perennial Ryegrass are White Clover and Subterranean Clover. In suitable climates which are discussed later in this article, most of the failures in keeping a good Ryegrass pasture can be put down to two factors; failure to keep a good successful continuous stand of clover, and the growing of Perennial Ryegrass on deep friable loose soil which is much more suitable to Cocksfoot.

While soil fertility is probably the chief factor to look for in the successful growth of Perennial Ryegrass, it must be remembered that Ryegrass requires a well compacted soil, preferably with a good water retaining sub-soil not too far down. On the loose brush soils of the New South Wales Coast and Tablelands, and the deep, loose red volcanic soils of the Southern Highlands, Ryegrass does not stand too well owing to the inability to get proper soil compaction. Under these conditions Cocksfoot is the

proper grass to use, although Ryegrass can often be introduced successfully if the soil can be compacted sufficiently by close heavy stocking.

Although Superphosphate does not have a great deal of action on Ryegrass, it is essential in practically all districts to dress Ryegrass pasture with regular proper quantities, as the intense encouragement thereby given to the clovers quickly re-acts on the Perennial Ryegrass. The introduction of nitrogen to the soil by growing clover is much more satisfactory, while being far cheaper than by trying to do the same thing with chemical fertiliser. Under special circumstances Sulphate of Ammonia can be used on pastures, but generally speaking the building up of the nitrogen with clover growth is much more certain as well as far cheaper. The outstanding attribute of Perennial Ryegrass is that once a good pasture has been laid down with this grass, the heavy stocking that it will carry will go to building up the fertility of the pasture itself. Once the stocking of a pasture becomes at all heavy, say at the rate of two to three sheep per acre, the dung and urine deposited by the animals and the hoof culture they give, all go towards building and increasing soil fertility and growth of the pasture. Provided there is good management the more intense the stocking the more successful Ryegrass will be.

The climatic requirements of Perennial Ryegrass can be summarised as follows:—

From the latitude of about Sydney, where the winter rainfall belt starts, southwards, the climate is suitable for Perennial Ryegrass where the average annual rainfall is not less than about 24 inches, and for the western side of the Dividing Range, where the altitude is not less than about 1500 feet. As one goes south where a bigger proportion of rains fall in the April to October period, and summer comes in later, therefore the need for altitude lessens. In Victoria, almost any district with a minimum 25 in. average rainfall should be suitable.



This is the sort of pasture which makes for top-priced lambs.

PERENNIAL RYEGRASS—(Continued)

From Sydney, northwards, the suitable climate seems to follow the 30in. average annual rainfall belt, with an elevation of about 1000 feet on the coastal side of the range and about 2000 to 3000 feet on the inland side of the mountains.

As the soil and climate conform to the requirements described above, so should Perennial Ryegrass and a suitable Clover be expected to form the basis of the improved pasture. Under the best conditions a Perennial Ryegrass and Clover pasture will be rather short of feed through the summer and early autumn, so that other constituents should be considered for the pasture. Cocksfoot in the cool climates and *Paspalum Dilatum* in the warmer districts, work in well with Perennial Ryegrass, and under suitable conditions will give a good body of feed through the summer and autumn when the Perennial Ryegrass is not making much growth.

When sowing Perennial Ryegrass, it is imperative to use the correct strain. Much of the old type of seed, poor in perennality, is still sold, but is quite useless when a long-lasting pasture is required; for that purpose, one of the best "Certified" strains only should be used. There are a number of these available, all good, but some are much more suitable than others for particular climates and conditions.

Perennial Ryegrass was the first grass that the scientists started to work on to separate the different strains. A tremendous lot of work has been put into Perennial Ryegrass strain investigation at the different Grass Stations throughout the world, particularly at Aberystwyth in Wales, in New Zealand and in Australia. In New Zealand it was quickly found that the old type of uncertified seed was generally a false perennial in type and to get back to the really true perennial strain, they found it necessary to locate and examine carefully, old pastures that had not been resown for many years. This is the origin of the Hawkes' Bay Strain, as it was found that nearly all the good pastures were in the Hawkes' Bay and neighbouring districts of the North Island of New Zealand.

When sowing paddocks with Perennial Ryegrass it is imperative to use the correct strain. To-day, quite a number of different strains are available and provided a Government Certified strain is used, they are good perennial types and any of them can be expected to give a good long-lasting pasture if the conditions are right. Nevertheless, as Ryegrass, generally speaking, is sown on good, highly fertile, valuable land, and good money will be spent in the regular use of fertiliser, it is essential to get the maximum returns by using the most suitable strains. When it is considered that such a pasture is being sown with the object of lasting for many years, it is in our opinion bad policy to choose the strain only on price.

PERENNIAL RYEGRASS—(Continued)

More work has been done on the different strains of Perennial Ryegrass than on any other grass, and we are now beginning to see the results of the work which has been done by different scientists throughout the world.

GOVERNMENT CERTIFIED HAWKES' BAY STRAIN—After careful examination and some years of comparative trials under very close scientific investigation, it was very definitely established that the Hawkes' Bay strain was the most perennial strain available in New Zealand and that it was outstanding in perennality, growth and feeding. Its only fault being that as the growth tended to mature it was inclined to lose palatability. This is the strain that has been certified in New Zealand and that has given such success throughout New Zealand and Australia as New Zealand Government Certified Perennial Ryegrass. As far as can be ascertained, it is exactly the same strain as the old seed sown in Australia and New Zealand many years ago, when the first pastures were put down, many of which still stand, notably on the richer South Coast country of New South Wales. More trials and critical examinations have been made with this strain than with any other, and to-day it is used as a standard of comparison in all Government Trials conducted in Australia and New Zealand. In Australia where such strains as Victorian Colac, Clunes, Kyneton, etc., have been tested, the results are usually given as a comparison with the True New Zealand Hawkes' Bay Strain. We have never seen any recorded results of trials made anywhere showing that any other type is more perennial than the True Hawkes' Bay. There are differences between the different types, but certainly so far as perennality is concerned, Hawkes' Bay has come through with "flying colours" in every test. New Zealand can be justly proud of this wonderful grass and they well deserve the great name it has gained in Australia.

The New Zealand Department of Agriculture have carefully worked out their Certification Scheme and seal and certify the following types of Hawkes' Bay seed.

SPECIAL NEW ZEALAND GOVERNMENT CERTIFIED HAWKES' BAY MOTHER is seed saved from pastures at least five years old, which have been proved by plot test and laboratory confirmation on samples saved in previous years to be the true, desirable type. Except for Pedigree Seed described below, this is the purest quality of this type in commerce and is the one we recommend where our friends and customers want the very best type of proved Perennial Ryegrass. Certified Mother seed is always at some premium on the other two grades, Certified Permanent Pasture, and Certified Commercial, but growers have the assurance that the parents



Healthy stock on an ideal pasture of Perennial Ryegrass and White Clover.

PERENNIAL RYEGRASS—(Continued)

of the seed they are planting have been taken from pastures at least five years' old, so that even odd plants which might not be of true perennial type will have been eliminated. The bulk of the Mother Seed we handle comes from the Hawkes' Bay district, and when Hawkes' Bay Mother Seed from the Hawkes' Bay district is sown, growers have the double assurance that they are getting the truest seed from the original pastures where this strain was found, and there has been no change in environment to upset the strain in any way at all. In New Zealand this strain is of the highest value and growers are always prepared to pay a premium for seed purchased from the Hawkes' Bay district as against seed from other districts, even although both are certified to be the right type.

CERTIFIED PERMANENT PASTURE is seed harvested from areas sown with Mother Seed or saved from areas which have been inspected and while of a perennial type they have a few odd off-type plants running through them which are sufficient to prevent it to be listed as a Certified Mother paddock. This is the usual grade sold in commerce and is the standard for most pastures. On a price basis, it is the general one used for ordinary planting as the best all-round type to use. It is the most economical and growers are assured that except for a negligible percentage, all the seed is of the true Hawkes' Bay perennial type.

CERTIFIED COMMERCIAL—In New Zealand this is accepted both by the Department of Agriculture and by growers generally, as of exactly the same standard as Certified Permanent Pasture. The difference is that samples of seed with the Certified Commercial Certificate have been checked by laboratory test only and not by field inspection. But, a sample of every Commercial Certified line is sown in a plot test and in at least 98% of the cases it has been proved that there is absolutely no difference whatever between the lines classed as Certified Commercial and those classed as Certified Permanent Pasture, as the two per cent. where a difference is demonstrated, it is not in perenniality but in type of plant and is of no significance. There has been a lot of controversy about these two types of Certified Ryegrass, and many people refuse to accept Certified Commercial, consequently it can frequently be bought slightly cheaper than Certified Permanent Pasture. While we have heard of opinions expressed about the difference between these two classes of Certified Seed, we have been unable to trace any actual evidence as to any difference and at the present time we accept fully the New Zealand Department of Agriculture's opinion in that there is no real difference at all between the two classes. Consequently, to those wanting this class of seed, we would offer the opinion that there is really no significant difference at all and any slight saving in price that can be got by buying Certified Commercial is a definite saving.

GOVERNMENT CERTIFIED PEDIGREE SEED—In addition to identifying paddocks of old pasture Ryegrass of True Hawkes' Bay Type, the New Zealand Government has been very successful in plant breeding of new types and have now produced a newer strain of Hawkes' Bay Ryegrass which is outstanding. This is sold as Government Certified Pedigree Seed. It is the true Hawkes' Bay Type specially bred from material particularly selected for outstanding qualities in leafiness and growth. This strain is destined to play quite a large part in pastoral development. Not many areas have been sown down with it yet, but in one particular case a farmer planted it in New Zealand and considers that he is getting double the feeding capacity with Pedigree Ryegrass that he could get from an equivalent paddock of "Mother Ryegrass."

We expect to be able to offer small quantities of the seed to our friends this season. As it is specially



Harvesting Yates' Certified Ryegrass.

PERENNIAL RYEGRASS—(Continued)

selected seed, the price will be very much higher than ordinary Certified grades of Ryegrass, but those interested we feel sure will like to have small lots for trial purposes or special paddocks. The New Zealand Department of Agriculture hope as this seed becomes more widely sown, to gradually incorporate it in their Certified Mother Seed, so that Certified Mother Seed will be of even a better type than it is to-day.

To those interested in the more scientific side of plant breeding, it is interesting to note that this is probably the first occasion when seed of a scientifically selected and bred grass is available in Australia. Many of the Breeding Stations are investigating single plant selections and the breeding of better types, but this is the first one to be made available in commercial quantities.

VICTORIAN CERTIFIED RYEGRASS—The Victorian Department of Agriculture have a certification scheme for Ryegrass, but it is not quite so complete as the New Zealand scheme and is based only on paddock inspection and age of the pasture. The Victorian Certification Scheme covers three types which are offered as Victorian Government Certified Ryegrass, with three district names, Colac, Clunes, and Kyneton added. While generally of the Hawkes' Bay Type, the Victorian strains of Ryegrass vary a little in that the plants mature earlier in the Summer and do not give quite the same length of growth, but to make up for this their growth in the early Spring is slightly quicker. It is claimed they are more suitable for the drier districts where the Summer is hot and dry, as they will give an increased carrying capacity during the season of growth. While this may be so, our own opinion is that one of the most important things to try and obtain in a pasture is long season of growth and generally we think this can be obtained better by using Hawkes' Bay Strain than Victorian. Where an early Summer is experienced and no growth can be expected during the Summer, it is possibly best to use the Victorian seed.

TASMANIAN PERENNIAL RYEGRASS CERTIFIED PERMANENT PASTURE—The Tasmanian Department of Agriculture have a certification for Ryegrass modelled on the New Zealand scheme and large quantities of Tasmanian Certified Ryegrass are gradually becoming available. The original paddocks of Tasmanian seed were sown with New Zealand Mother Seed and it can be accepted that Tasmanian Certified Permanent Pasture Ryegrass is exactly the same type and quality as the New Zealand Government Certified Permanent Pasture and Certified Commercial Strains.

WIMMERA RYEGRASS

(*Lolium Rigidum* Var. *Strictum*)

A heavy seeding annual member of the Ryegrass family, Wimmera Ryegrass is very hardy, and as the seed carries over in the ground through the summer droughts under Australian conditions, it has proved of the utmost value and has been instrumental in helping forward pasture improvement in localities far too dry for permanent grasses. Having the same ability as Subterranean Clover to re-seed itself each year it was at one time thought that they would make an ideal combination for areas too dry to carry perennial grasses but where there is a good winter and spring rain. Unfortunately, Wimmera Ryegrass does not persist and spread on hard, uncultivated ground like Subterranean Clover. It is quite satisfactory on rich, crumbly, fertile country such as one finds in the North-West around the Gunnedah districts, and where the soil has a high self-mulching quality which creates a soft, loose seed bed during the summer dry period in which the seeds can find a good holding and cover to come away with the autumn rains. However, it has been found that some sort of surface stirring of the soil such as a spring tooting or heavy harrowing rejuvenates the stand, and, if this can be done, even on hard soils, Wimmera Ryegrass can be kept as a good permanent pasturage.

Being a quick-growing member of the Ryegrass family, Wimmera is very sensitive to soil fertility, and it is essential, except where soil is extraordinarily rich in nitrogen such as the black soil country of the North-West, to have some sort of Clover growth flourishing with it. In the south the best combination is Wimmera Ryegrass and Subterranean Clover. The building up of the soil fertility and the loose mulch left by the Subterranean Clover helps to form a good seed bed for the Wimmera Ryegrass the next year and much less cultivation of even the hardest ground is necessary once a good cover of Subterranean Clover is established. In the drier parts where Subterranean Clover is not suitable, Wimmera Ryegrass will still flourish, as it has the ability to grow in quite a short season; the usual combination under these circumstances is Wimmera Ryegrass and Lucerne, sown at the rate of 1-2 lbs. Lucerne per acre and 2-4 lbs. Wimmera Ryegrass, according to the rainfall. This is quite a good combination, particularly if the paddock is cultivated in the late summer, which should be done for the Lucerne, at the same time forming a loose seed bed for the Wimmera Ryegrass.

Under ideal conditions Wimmera Ryegrass will quickly thicken up, in fact it frequently becomes so thick as to almost choke itself. Pasture management in the way of heavy feeding off in the late spring before the seed is set, or a light cultivation to tear out

WIMMERA RYEGRASS—(Continued)

the surplus seedlings in the early autumn, usually controls this difficulty.

Wimmera Ryegrass is relished by all classes of stock, is of very high feed value, and is particularly valuable to the sheep man for carrying his sheep when the native grass seeds are falling, as there are no objectionable spines or burrs on this grass at any stage of its growth.

One of the most important and valuable uses for Wimmera Ryegrass is the sowing of cultivation land which is being let go to pasturage. If a light sowing of Wimmera Ryegrass, say 2 to 3 lbs. per acre, is included with the last grain crop, the Wimmera Ryegrass will grow and seed itself freely, then the next autumn the young seedlings will quickly sprout through the old stubble and form a quick heavy covering of nutritious pasturage; it will tend to check and keep down the growth of useless weeds which would quickly take advantage of the unused or uncovered soil surface. In suitable districts, 1-2 lbs. per acre of Subterranean Clover should be included with the Wimmera Ryegrass. The previous cultivations will tend to keep the soil loose for some years, which is just what the Wimmera Ryegrass requires, and if, after a few years, it is decided to again put the land into crop, the soil will have benefited by the great increase of humus caused by the heavy growth of the Wimmera Ryegrass, either as animal droppings or as rotted grass and roots incorporated in the surface soil. The soil will, of course, be well impregnated with seeds, but these can be easily eradicated by the ordinary cultivation during the fallow preceding the crop.

It has been known for Wimmera Ryegrass seed to be adulterated with the cheaper pseudo-Perennial or Italian Ryegrass, which is very hard to detect. The greatest care is taken by us to procure our Wimmera Ryegrass seed from districts where the stands are pure, and the plants are of the best type. Another important point also is the fact that practically all samples of Wimmera Ryegrass saved in Australia contain Hexham Scent. While this weed is of no great importance in a permanent pasture, it is exceedingly detrimental in wheat paddocks, and where there is any idea of using the land later on for a grain crop the greatest care should be taken to sow Wimmera Ryegrass free of this objectionable weed. All Yates' Wimmera Ryegrass from selected pastures is heavily and carefully dressed over machines specially equipped for the eradication of Hexham Scent. We believe that we are the only people in Australia who have the special machines necessary to do this job properly.

ITALIAN RYEGRASS

(*Lolium Italicum*)

Italian Ryegrass is a biennial under favourable conditions. It is probably the quickest and most luxuriant growing of all the winter grasses when sown on well-prepared land. We recommend that a little Italian Ryegrass be included in all grass mixtures sown in districts of good rainfall. Acting as a "nurse" crop for the slower developing perennial grasses in the mixed sowing, Italian Ryegrass also gives a quick bite to stock which are thus encouraged to tramp quietly over the newly-sown area. This unhurried "hoof cultivation" is just what is required to compact the soil and strengthen the root systems of the developing perennial grasses.

As a "Temporary Pasture" grass, Italian Ryegrass is superb. 15-17 lbs. of this grass with 3-5 lbs. of Perennial Red Clover per acre, or a mixture of Perennial Red and Berseem Clover, give about the quickest-growing pasturage of all grasses and clovers. There is no sweeter grazing for stock during the cooler months of the year, and no better "Meadow Hay" is produced when cut in the late Spring. A



Wimmera Ryegrass in the Canowindra district, showing the heavy spring growth.



Ryegrass Cocksfoot Pasture on Southern Highlands.

ITALIAN RYEGRASS—(Continued)

"Temporary Pasture" of this type will last for upwards of two years or more (if well managed), giving a wonderful return over the period of its most vigorous growth. For spelling cultivation land which may be subsequently brought back into cropping without fear of the grass and clover persisting when ploughed under, there is really nothing better than this mixture. The best time to sow is in the autumn. Fertile soil conditions are essential.

On rich lands in good rainfall areas Italian Ryegrass is deserving of more notice than it has hitherto received as an alternative crop to Oats for winter and spring grazing. Its very quick, upright, succulent, leafy growth, palatability, and ability to stand very heavy stocking give it a great value in this respect. As a smothering crop to clean up cultivation land a heavy sowing gives good results.

On the North Coast of New South Wales, Italian Ryegrass is frequently sown in the Maize paddocks, just about tasselling time, in those districts January or February, at the rate of about 30-40 lbs. per acre. The Maize shelters the young seedlings, and by the time the Maize cobs have been picked, there is a great body of feed on the Ryegrass which, together with the aftermath of the Maize, gives great feed through the winter, and is good practice because the Italian Ryegrass smothers useless weed growth and makes a fine green manuring crop for ploughing in the following spring or summer.

On late summer burns, where Paspalum or Rhodes is being sown for a permanent pasture, the addition of, say, 8-10 lbs. per acre of Italian Ryegrass will give a quick growth to hold the ash bed from washing away, smother weeds, and provide winter feed, so making good use of the land until the Paspalum and Rhodes establish themselves the following summer.

We are now able to offer two grades of Italian Ryegrass as follows:

NEW ZEALAND GOVERNMENT CERTIFIED—This strain is the true leafy biennial type most suitable to use when laying down temporary pastures, particularly in combination with Perennial Red Clover. It carries into the second year much better than the uncertified grade, and throws a much leafier growth.

UNCERTIFIED NEW ZEALAND is a more annual type, which is quite good to act as a nurse crop when sowing down a perennial pasture or for sowing over cultivated land and through Maize, etc., for winter feed for one season only.

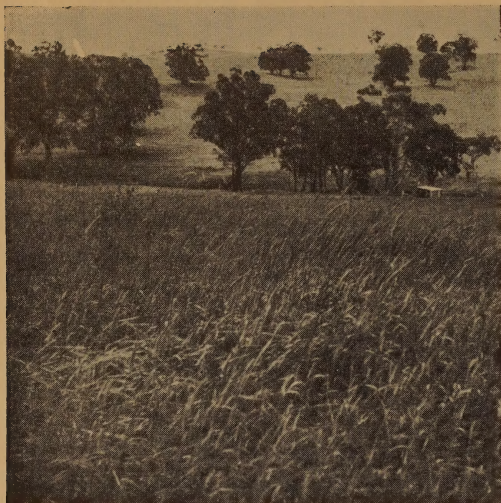
COCKSFOOT

Next to Perennial Ryegrass, Cocksfoot is the most important grass for permanent pastures. There is a great difference between the two, while Ryegrass revels in heavy, clay soils of close texture and close, heavy stocking (at proper intervals, of course) with the consequent hoof culture and surface consolidation given by the stock, Cocksfoot for best growth prefers rich, free, open soil with good rainfall and less intense grazing. The best conditions for the persistence and spread of Cocksfoot is the sort of cropping provided by cattle, while Ryegrass likes the close feeding off of sheep. Consequently, where Cocksfoot has to be looked upon as the main part of a pasture, the stocking should be less intense and stock taken off before the feed is cropped nearly so close as would be the case with a Ryegrass sward.

Where a mixed pasture of Ryegrass and Cocksfoot is sown, it should be carefully kept in mind that Cocksfoot is very much slower in establishment than Ryegrass. It is more palatable and if the true value of sowing Cocksfoot in a pasture is to be had, very careful management for the first year or so must be undertaken. So far as possible, stocking should be by cattle and they should be put on in large numbers so as to feed the whole growth off as quickly as possible. It also pays to delay the first feeding-off just as long as can be, so as to let the young Cocksfoot plants get a good hold in the soil, otherwise stock are inclined to pull them up. Cocksfoot has been looked on as a grass needing high rainfall and rather unable to persist under heavy stocking. We are of the opinion that even while these factors are in part true, that Cocksfoot can be grown in a surprisingly low rainfall, provided correct management is used. We have seen Cocksfoot persisting in the South Western Slopes in 24 and 26 inch rainfall areas with fair success.

In the Southern winter rainfall belt of Australia, Perennial Ryegrass makes its growth at the times the rains come, and therefore makes full use of the possible growing period; but as one comes northwards, and rain can be expected in early summer with storms right into mid-summer, Cocksfoot should be well worth while, as it makes its main growth in late spring and early to mid-summer, and so can take advantage of rain falling then, which would be too late for Perennial Ryegrass. Cocksfoot will not stand up to close continuous stocking as well as Perennial Ryegrass, but nevertheless it is very good in this respect, particularly if it is stocked intermittently and allowed to make reasonable growth between grazings. A good strain of Cocksfoot should be well worth while including in permanent pasture mixtures in all districts of 25in. rainfall or better, where Perennial Ryegrass will grow, particularly towards the North, where summer storms may be expected.

Write, Wire or 'Phone Yates' for Special Quotations for Larger Quantities of Seed than Quoted in our Current Price List.



Phalaris Tuberosa in the Central Tablelands—first year from seed.

COCKSFOOT—(Continued)

Cocksfoot likes a deep, loose soil which is not suitable to Perennial Ryegrass, and on the deep, loose, red and chocolate volcanic and brush soils of the coastal belt of New South Wales, Cocksfoot should be the main grass in any mixture sown; although there is ample rainfall in these areas, the ground dries out badly owing to the absence of a stiff subsoil, but the deep roots of the Cocksfoot are able to penetrate well down below the surface. Many of these loose soils gradually compact with the rain and stock-tramping after the pasture has been laid down for some years, and then it is often noticed that Perennial Ryegrass and White Clover appear in the pasture; this is all to the good, and every care should be used not to destroy the soil compaction. Cocksfoot, particularly the most perennial strains, such as New Zealand Akaroa types, is rather slow to germinate, and sometimes a little difficult to establish; great care should be used not to over-stock the paddock until the grass is well established with a good hold in the soil.

The different strains of Cocksfoot seed vary greatly in cost, but the extra value of the better strains is so great, buyers should beware of so-called cheap quotations and should be most particular in seeing they have got just the type they require. The most perennial Cocksfoot of the leafy, pasture type comes from New Zealand and is known as AKAROA COCKSFOOT. This seed is certified by the New Zealand Department of Agriculture under two designations: New Zealand Certified Akaroa and New Zealand Certified Plains.

NEW ZEALAND CERTIFIED AKAROA COCKSFOOT "MOTHER" is seed gathered in the Akaroa district where it has been growing without resowing for many years and is undoubtedly the best of the commercial types available. It is the true "Mother Seed" and CERTIFIED PLAINS seed is a progeny of this type planted on agricultural land for seed purposes. While it is good Cocksfoot, it is generally accepted that it is not to be compared with the true Akaroa Mother Type and we strongly recommend that growers should insist on the Certified Akaroa Mother Seed.

In addition to the above types, the New Zealand Department of Agriculture has been selecting Cocksfoot and have produced a particularly fine leafy strain of outstanding value. This is known as "PEDIGREE COCKSFOOT" and is certified as "NEW ZEALAND CERTIFIED PEDIGREE SEED."

COCKSFOOT—(Continued)

It is much more expensive and so far very little is available, but for those wanting the really best type of Cocksfoot available should ask for "PEDIGREE SEED." While it is impossible to say at the date of writing, we anticipate having small quantities available this coming season.

The cheap hay type of Cocksfoot is that which comes from Denmark and is known as "DANISH SEED." To make certain that this cheap type of seed can be identified in comparison with the good pasture types which come from New Zealand, the Australian Authorities have instituted staining regulations and this cheap Danish seed has to be stained on importation. The regulations specify that 1% of seed must be stained red and all buyers should realise that if they see any red stained seed in samples they buy there is every reason to believe that it is the cheap Danish type.

To try and improve the quality of their seed, the Danish Authorities imported Certified Akaroa Mother Seed and are now growing it under a Certification Scheme of their own so that to-day CERTIFIED DANISH COCKSFOOT is available and as it is Certified seed it is allowed into Australia without staining. This is the seed we offer as DANISH COCKSFOOT as we have discarded altogether the cheap hay type which has to be stained and in our opinion is almost worthless for our conditions. Certified Danish Cocksfoot is quite good and is of the correct type, but until it has been proved by lengthy field tests, we will not recommend it as compared with New Zealand Certified Mother Akaroa Cocksfoot and unless our customers particularly ask for Danish Seed, we always send Certified Akaroa.

LOCAL VICTORIAN-GROWN COCKSFOOT—In Victoria, small quantities of local seed are saved and it has been proved to be a very good type. Unfortunately, however, there is no certification scheme and consequently there is no assurance whatever that seed offered as Victorian is of the correct type. Although stocking small quantities for those who want it, we consider that growers are much better advised in sowing "NEW ZEALAND CERTIFIED AKAROA MOTHER SEED."

PHALARIS TUBEROSA

(Bulbosa)

A wonderful winter-growing grass of outstanding permanency under quite adverse conditions. It is adaptable to heavy clay soils or even light soil provided it is reasonably deep with a permeable subsoil. Soil of high fertility is necessary to create maximum growth, and should Subterranean Clover be introduced, soils which now will not maintain Phalaris will do so through the increased fertility within a few seasons.

Once established it is highly persistent and maintains itself better than Perennial Ryegrass throughout droughts and even extensive wet conditions. In situations most suited to Perennial Ryegrass, Phalaris Tuberosa is by no means superior, and its main use is in drier localities and deeper soils not suitable to Perennial Ryegrass.

Phalaris Tuberosa presents some difficulty when attempting to establish it. It is not easy to secure a good strike as being slow to germinate it suffers greatly from the competition of other grasses or weeds. The land must be thoroughly cleansed. Once established, however, it is highly persistent and will resist the competition of all other plants. Owing to being susceptible to competition from other grasses of more surface rooting habit in its early stages of growth, it is preferable to sow Phalaris Tuberosa in conjunction with Clovers only. It is necessary to introduce the plant in all places where it is required, as, unlike Sub. Clover or Ryegrass, it does not spread from paddock to paddock of its own accord.

PHALARIS TUBEROSA—(Continued)

GOVERNMENT CERTIFIED PERMANENT PASTURE—This seed is saved from areas which have been laid down for many years, and proved to be the real permanent type. The seed is saved and bagged under Govt. supervision, and is certified and sealed.

RHODES GRASS

(Chloris Gayana)

Rhodes Grass is a summer growing perennial upright grass which throws out long jointed runners, rooting at the nodes. It is a quick-spreading grass, and is of particular value on second-class and hilly land where Paspalum does not thrive. Rhodes Grass is an excellent fodder, although it has not quite the same high feeding value as Paspalum Dilatatum. At the same time, it will grow well under drier conditions, and therefore is particularly suitable for warm districts of summer rainfall too dry for Paspalum Dil., which prefers the moister coastal climate, whereas Rhodes, provided it gets a reasonable rainfall, will thrive inland.

Rhodes Grass is doing very well as far inland as Roma (Queensland) and districts like Dalby. In New South Wales it has been recommended and proved successful in the 25 to 30-inch rainfall belt of the North-west, but in these drier areas it is very difficult to get a good "strike," as the plant seems to require two or three weeks of moist, muggy weather to establish itself successfully. Once properly established, it is remarkably hardy for a perennial grass, and will stand up to quite dry conditions. If sowings of winter grasses, such as Wimmera Ryegrass, Lucerne, etc., are being made, it is quite good practice to include a small proportion of Rhodes in the autumn sowing, as the seed will lie in the ground and come away as the ground warms up in the spring and early summer; but if sowing alone, Rhodes Grass should be sown at a period when good summer rains can be expected.

On the Coastal belt, Rhodes is a valuable grass on hillsides where the soil is too light and well-drained for Paspalum Dil.

PASPALUM DILATATUM

(Yates' Prime "Handshaken")

One of the most important and valuable pasture grasses for warm climates with a good summer rainfall. A summer-growing perennial of very strong growing habit, it starts to grow with the first summer rains after the ground has warmed up, and it keeps growing until caught by the heavy winter frosts. Paspalum Dilatatum is the most important permanent pasture plant of the Coastal belt of Northern New South Wales and Queensland. On good soil its feed value is very high, and it is a wonderful milk producer. If let go it becomes very

PASPALUM DILATATUM—(Continued)

coarse and long, and in a good season it will frequently grow as high as the fence. When rank, it loses a good deal of its feed value, and is much better when kept properly controlled. Paspalum Dil. is such a vigorous grass that, unless properly controlled, it is liable to take charge and drive out almost every other plant species. At the same time, under heavy grazing conditions, clover grows well with it, and is of the utmost value in making a good pasturage.

One of the big difficulties with Paspalum is that old stands gradually become sod-bound, and the Paspalum does not come away nearly so quickly when in this condition. This trouble is largely a matter of soil fertility and pasture management. Provided the fertility of the soil can be kept up by growing clovers, Paspalum does not become sod-bound nearly so readily. Where it will grow, Paspalum is an ideal constituent to make a combined winter and summer pasture; it combines well with Perennial Ryegrass, White Clover, and under some conditions, Cocksfoot and Subterranean Clover. In the sub-tropical North Coast of New South Wales and Coastal Queensland, where Paspalum is the main grass, it pays to tear up the old Paspalum stands which have become sod-bound. If done in the autumn, this allows the introduction of Ryegrass, White Clover and in some cases, Phalaris Tuberosa, and provided reasonable winter and spring rains are received, the mixture gives a wonderful "all the year round" pasture, as the winter-growing White Clover and Ryegrass grow through the winter and spring; when they become dormant in the late spring, the Paspalum is breaking into growth and carries on into the following winter. In the more southerly districts, particularly on the coast, Paspalum is a valuable addition to Ryegrass and Cocksfoot pastures, as it comes into growth from about November-December, and keeps going right through to the autumn, so overcoming the rather dead period when the Ryegrass is, more or less, dormant. In sub-tropical conditions, it is most important to keep Paspalum low, and not to let it get away into rank growth. If this is done, the value of the feed is kept high and the other constituents of the pasture are not crowded out.

In the sub-tropical and tropical coastal areas, Paspalum is most important for sowing on new country which has been recently burnt. The ash from the burnt scrub forms an ideal seed bed, and a quick "strike" results if the Paspalum is sown at the right period of the year, which is usually December-January, just when the summer rains start. For these conditions, it is frequently mixed with Rhodes Grass, which, being a running grass, spreads rather more quickly, but eventually is usually driven out by the Paspalum.



The Renovation of Paspalum Pastures: (left), a nicely-turned pasture awaiting top-dressing and sowing of winter grasses and clovers; (right), the result of top-dressing Paspalum—a well-balanced all-year producing pasture.



The essence of Pasture Improvement—quick grazing and heavy stocking.

PASPALUM DILATATUM—(Continued)

Paspalum seed varies greatly in quality. Owing to the fact that the seed in the head ripens unevenly, it is impossible to machine-gather good quality Paspalum seed. The only way to get high quality seed of good germination is to be sure the seed is of Hand-Shaken quality. This means that the seed is hand-gathered by shaking the uncut heads over a dish; by this method the ripe seed is gathered while the immature seed is left on the plant. We do not stock anything but the prime Hand-Shaken seed.

For the last two or three years, Paspalum seed has been rather badly affected with ergot, which does not seem to do any harm to the pastures, and so far as we know, there have been no authenticated instances of stock suffering from ergot in pastures, but in some cases it does affect the quality of the seed. We watch this carefully, and samples we offer contain a minimum of this trouble.

PRAIRIE GRASS

Prairie Grass is probably the most palatable grass variety grown. It makes extremely good growth and in every way is a most valuable type. It gives a tremendous body of wonderfully succulent, palatable fodder, from early Spring into Summer, and if fed off quickly will make good recovery with any sort of rain. In the dairying districts of Queensland it is used quite largely, and is a variety well worth growing in most dairying country, particularly in Coastal areas if it can be treated in the same way as a paddock of green oats, that is, allowed to grow to fair length, cropped down quickly and shut up again. Treated carefully, Prairie Grass will stand for long periods particularly if the crop is allowed to mature occasionally so as to drop its seed, and the ground subsequently cultivated. Unfortunately, this grass will not stand up well to constant grazing, one reason being that the stock are so very fond of it that they never give it a chance, but where good rotational feeding is carried out it stands up surprisingly well and has given excellent success on a lot of the Murray Irrigation Country where this practice is carried out properly. If sown alone, we recommend that from 20-40 lbs. per acre be used. In mixture it is wise to include 1-3 lbs. per acre.

Owing to the very high quality of this grass, scientists have been trying to evolve better strains

PRAIRIE GRASS—(Continued)

and we are proud to offer YATES' PERENNIAL PRAIRIE GRASS which is a selection from ordinary Prairie and is the most perennial type available, standing up to grazing conditions much better than ordinary seed. We have had nothing but praise from growers and others who have tried this Prairie Grass and for field conditions and under critical tests this strain has undoubtedly a great advantage on the common type. As the seed is specially grown and selected to keep it true to type it is necessarily more expensive, but obviously it is a better proposition when the extra grazing is considered.

When ordering Prairie Grass, our friends are asked to carefully specify which of the two types they require. YATES' PERENNIAL PRAIRIE, specially selected for long lasting type, and YATES' REMACHINED PRAIRIE GRASS, the best samples of commercial Prairie Grass obtainable, heavily re-dressed for purity and cleanliness.

GIANT OR BLUE PANIC GRASS

(Panicum Antidotale)

A grass which is extremely drought-resistant, and particularly adapted to areas of restricted rainfall where summer storms are experienced, such as Western New South Wales and the inland of Queensland. It is perennial, making its main growth in the summer. To stock it is very palatable, and should be tried in all districts of rather low rainfall, where the more usual grasses will not grow successfully. Great success has been obtained in sowing in combination with Lucerne. Generally speaking, the seed should be sown in the spring at the rate of from 1-3 lbs. per acre, on well-prepared country, but under certain circumstances it can be sown in combination with other grasses if thought wise, in the autumn. Seed is usually rather expensive, and at the present time we would recommend it to be sown on cultivated areas so as to lessen the risk of a bad "strike."

DANTHONIA

(Wallaby Grass or White Top)

One of our main native grasses found naturally all over Australia down to the region of about 19-20-

DANTHONIA—(Continued)

in rain fall. It is a very valuable species and makes excellent pasturage, particularly for sheep. It does not demand high soil fertility, and in the better rainfall districts it is gradually superseded by the more succulent Ryegrass, etc., as soil fertility is built up by Clover growth and top dressing with fertiliser. It is rather difficult to establish from seed and occurs naturally over most areas suitable for its growth.

SHEEP'S BURNET

(*Poterium Sanguisorba*)

This herb thrives on poor and shallow soils, either on flats or hills, and will stand heavy stocking. Having a long tap-root, which penetrates deeply into the soil, it will remain green when other fodder is burnt up, thus enabling it to withstand long periods of dry weather without its growth being checked to any great extent. Once established it is very persistent, quickly shooting away after every shower. Being a perennial, it grows practically throughout the year, giving the most herbage in the spring. All types of stock are fond of the foliage, and thrive on it, particularly sheep. We specially recommend its inclusion in mixtures on second-class soils in districts of 25-inch rainfall and over, where the summer is cool. Wherever possible, our supplies are drawn from Australian sources, but, owing to seasonal conditions, supplies are uncertain, and occasionally we have to draw on European supplies. Local seed is to be favoured, as it is of better germination and harder habit. Sow 10-12 lbs. per acre alone. When included with grass mixtures, use 1-3 lbs., according to the mixture.

CHEWINGS FESCUE

(*Festuca Rubra* var.)

This grass makes a first-class pasture for sheep, as it is most palatable. It has been found suitable to colder districts on second-class country rather dry for Ryegrass, and forms a good sward where other grasses would not succeed. It is permanent, and throws up a useful amount of feed in the early spring. We think a little of this grass might be included in a mixture for a permanent pasture in rather sour, hilly country in the colder, fine wool-growing districts of good rainfall, where it should be valuable for thickening up existing pastures. Being a dwarf grower and exceptionally hardy, it should be suited to such purposes. On account of its foliage growth and evergreen appearance during the winter, it is suitable for lawns, golf links, and ornamental parks, and forms one of the grasses in our special Lawn Grass mixtures for cool, moist climates.

AGROSTIS

As an agricultural grass, *Agrostis* has been little used, but may have some value in cold districts for sour, rather wet land, too cold for Ryegrass. Under these conditions it will grow on land not sufficiently fertile to carry a good sward of Ryegrass or White Clover. It is a fine foliaged perennial, suitable for and capable of forming a close, dense turf on second-class country. In the *Agrostis* family there are several species, the most commonly known being *Agrostis Tenuis*, New Zealand Browntop or Bent. Provided ample water is available throughout the summer, or the weather is reasonably cool, *Agrostis Tenuis* is remarkably hardy. To keep it in full growth during the summer it must be kept growing by manuring well and copiously watering. As a turf grass it is superb, and makes by far the finest and best sporting turf we have in Australia. In cooler districts it is inclined to be a little soft, and this can be corrected by adding Chewings Fescue to the mixture. The seed we stock is bought specially for lawn sowings and is Government Certified as free of the coarser growing

AGROSTIS—(Continued)

Red Top or *Agrostis Vulgaris*. *Agrostis Vulgaris* is used to some extent for sowing on golf fairways or where a rather coarse sward is satisfactory. As an Agricultural grass it is used on rather low, wet land in cold climates.

TALL OAT GRASS

(*Avena Elatior*)

This grass is frequently used in pasture mixtures and has proved very hardy. It appears to replace Cocksfoot in soils too poor or light for the latter; it has a deep-rooting system, which protects it against drought. It is a good winter grass and a quick grower. Stock may at first be adverse to it, but when used to it, eat it readily enough, especially if sown in mixture with other grasses. Customers are recommended to try this grass in land which is rather light in character for other artificial grasses, and we would be pleased to have reports after testing. It is best included in mixture with other grasses at the rate of from one to three pounds per acre.

TALL FESCUE

(*Festuca Elatior*)

A very rank-growing perennial grass suitable for the cooler districts. While it prefers rather wet conditions, it is remarkably hardy, and is well worth planting on country rather too dry for Cocksfoot and Ryegrass. Planted under moist conditions, it is exceedingly rank-growing, and can become quite a nuisance; but on second-class country in the cold districts it is well worth sowing, as it has quite good feed value, particularly if not too rank, and is exceptionally hardy. Tall Fescue is a very close relative of *Festuca Mariae*, a plant recently introduced by the Council for Scientific and Industrial Research, Canberra, and which looks as if it may have some value for second-class soils under rather dry conditions. Where the better grasses, such as Ryegrass, Cocksfoot, etc., will grow, Tall Fescue should not be considered.

ELEPHANT GRASS

(*Pennisetum Purpureum*)

This is a grass that should be grown mainly along water courses and in marshy depressions. Plant cuttings in the spring, about 3 feet apart. Seed is not available. It is a vigorous growing plant, attaining a height of 12-15 feet. Tests conducted by the Department of Agriculture have shown a return of about 50 tons of green fodder per acre per year. It is of high nutritive value, but should not be allowed to grow too high and coarse.



Single Plant Selections of Cocksfoot, showing individual variations in type.



A true velvet lawn requires the correct grasses for the situation—Ask Yates' advice.

COUCH GRASS

(*Cynodon Dactylon*)

This grass stands heat and drought well, and is specially suitable for dry and sandy spots on the Coast and other mild districts of fair rainfall, and where other grasses will not flourish. As a summer grass on poor soils it has no equal. During the hottest weather it always has a green appearance, but, unfortunately, is not of such high nutritive value as other grasses. In cool districts where frosts are severe it is dormant during the winter. It is a valuable plant for binding sand hills and dams and for sowing around sheep and cattle yards. Seed should be sown in warm weather and after rain, and unless this is done, germination is often unsatisfactory. In warm climates, this grass is largely used for lawns, making a close, fine turf, and for this purpose about 6 lbs. per 100 square yards should be sufficient. Sow in spring and summer.

KIKUYU GRASS

(*Pennisetum Clandestinum*)

Kikuyu has proved of great value under special conditions, such as combating bracken fern and other strong weed growth. It can be used with success as a soil binder for such places as creek banks, dams, etc. It responds readily to better soil fertility, but will also thrive fairly well on poorer light soils. It has proved remarkably drought-resistant, and present indications point to the fact that it is a grass suited to localities with a rainfall of 25 inches and over. This grass is perennial with a strong system of surface and underground runners which quickly root at the joints and send out fresh runners. Seed is not available, and roots should be planted during the spring, summer and early autumn months. Growers should not entertain the idea of planting this grass on better class country, and should keep it out of cultivated paddocks, for once established, it is persistent in growth and can become a pest. When planting, if possible, plough the land, opening the furrows 6 inches apart, and dropping the root-lets 3 feet apart. At this rate, 2500 plants will suffice for one acre.

KENTUCKY BLUE GRASS

(*Poa Pratensis*)

Best growth is obtained from soils of limestone foundation, and it also grows well on volcanic or alluvial soils. Generally speaking, however, it has been superseded by Perennial Ryegrass and Phalaris Tuberosa, both superior pasture grasses. It is very resistant to frosts. It is one of the best grasses for lawns, and is included in our Lawn Mixtures, where it assists in making a close sward of beautiful colour.

MITCHELL GRASS

Mitchell Grass is a native of Australia and from a pasture stand-point may be considered one of the greatest native grasses we have. It is quite common in the North Western and Central Western Slopes and Plains. It is a very nutritious grass and excellent for hay making. It is a Summer grower and must have good Summer rains and congenial Winters for best development. Seed should be sown on good, deep, rich, heavy soil at the rate of from 1 to 4 lbs. per acre, according to rainfall and preparation of the seed bed. A good method of sowing is to scatter seed, eat the paddock right out with sheep, and allow the sheep to tramp the seed in, removing stock immediately rain falls. Seed requires very warm weather to germinate satisfactorily and when first rains come the temperature may not be high enough. However, no harm will be done and seed will come away after any following rain, provided the temperature is sufficiently intense. Sow in early Spring.

MOLASSES GRASS

A variety which has proved of value in North Queensland, apparently does best in moist, tropical situations.

PASPALUM COMPRESSUM

(CARPET GRASS)

A vigorous summer growing perennial which does very well on second-class country, too poor for Paspalum Dil. Its feeding qualities are poor, and it should not be used where better grasses are possible. Being very vigorous, it is inclined to crowd out better grasses, so that it should be used with great caution.

POA AQUATICA

A perennial water grass of high value for low, wet, swampy land, where it will take charge and provide good cattle feed, growing right in the water. Seed is not available, and it can only be introduced by planting roots or sods round the edge of the water, when it will quickly establish and thrive. It does best under fairly cool conditions, and the feeding value is increased by the introduction of Lotus Major with it. Roots will be quoted on application.

PASPALUM DISTICHUM

(WATER COUCH)

A summer-growing grass which will thrive on low, wet land, but it can be a serious pest in cultivation. Root planting is only recommended when it is reasonably sure the land would otherwise be useless. During the summer it gives much grazing. Roots only available, price on request.

CLOVERS FOR PASTURES AND CROPS 13

"Make the conditions suitable for a legume and manage the sward to favour the legume as well as to feed the animal and everything else will be easy—the battle will be won."

This statement was made by a world-famous pasture expert and we cannot stress too much the great importance the clover plays in successful pasture establishment. Firstly, for grazing, it gives a balanced feed, keeping up the protein content; secondly (and we think most important), it plays a tremendous part in the increasing of soil fertility. Where a legume is at work in poor soils it will be found that soon the fertility will be increased and that higher grade and more productive grasses can be introduced where hitherto they would not grow successfully.

There are many clovers available for the growers' use; all have their special values and proper places. Highest grade permanent pastures giving the greatest carrying capacity in good rainfall areas consist of Perennial Rye and White Clover. As a soil improver and heavy producer in predominant winter rainfall districts, Subterranean Clover stands alone. For the quick production of rich nutritious fodder under good conditions use Perennial Red Clover and Berseem Clover. On the following pages each clover is dealt with separately and their respective uses stated.

Never sow a pasture, permanent or temporary, without the inclusion of a suitable clover; if you do, not only will the feeding value of the grazing suffer, but, also, you are doing a gross injustice to the soil, and this must be avoided.

SUBTERRANEAN CLOVER

Subterranean Clover is undoubtedly one of the most important discoveries in Australian agriculture over the last decade, and probably it is doing more to bring prosperity to large areas of Australian agricultural country than any other single development which has come about in that time. It is an annual plant which starts its growth in the cool weather about March-April, and matures its seed from about October to December, according to the variety. Subterranean Clover has the remarkable ability of depositing its seed well into and under the surface soil, where the seed will lie through the summer until the next autumn rains; thus, once established, it will quickly spread over the country. Subterranean Clover will give a very high production during the growing period. In one trial in the Harden district this year it was estimated that the amount of green growth on a good paddock of Subterranean Clover amounted to 18 tons green fodder per acre, and when mature the growth "hays" off into a very nutritious dry fodder which will carry stock well until bleached out by heavy rains. In addition, the production of seed is very heavy, up to 8 cwt. or even $\frac{1}{2}$ ton per acre, and this is readily eaten, by sheep particularly, during the summer, providing an even better food than the natural trefoil burr.

One of the most important attributes of Subterranean Clover is that, being a legume, it has the ability to introduce nitrogen into the soil which, together with humus formed by the heavy growth which dies off in the spring, builds up soil fertility in a remarkable way. In fact, Subterranean Clover has such powers of improving soil fertility that after 3 or 4 years of establishment in country which in its natural state is unable to carry best grasses, can be laid down into first class Rye Grass pastures.

It is absolutely essential that plenty of Superphosphate should be annually applied to Subterranean Clover land. It will only thrive where there is plenty of quickly available phosphate. Top-dressing at the rate of, under ordinary conditions, 1 cwt. per acre should be carried out annually, or at least every two years. Where the production is high, it has been found a payable proposition to apply up to 2-3 cwt. Superphosphate per acre per annum. Never sow Subterranean Clover seed alone; always with Superphosphate.

By choosing the correct strains of Subterranean Clover this plant can be successfully grown on any country with a rainfall of not less than about 18-20 inches where the rains come in the winter and spring. In New South Wales it has been grown success-

SUBTERRANEAN CLOVER—(Continued)

fully in all districts as far north as a line running roughly due west of Newcastle, except the Western Division and the Western Riverina. On the Northern Tablelands it is being grown successfully in districts within the 30-inch rainfall belt and better, particularly where there is some altitude to give a long spring growth.

In all districts where the climate conforms or is better than that described above, Subterranean Clover should be introduced as widely as possible. In practically all circumstances, the successful introduction and wise management of Subterranean Clover, together with proper top-dressing with Superphosphate, can be relied on to at least double the carrying capacity of the natural pasturage; in many cases by careful management and the knowledge of just what to do, the carrying capacity can be made three or four times that of the natural pasturage. For pasture improvement, Subterranean Clover should be considered as the starting point on all country except the richest land in the high rainfall belt. Subterranean Clover is easily introduced, as it will "take" if just sown over the natural pasturage with Superphosphate at the rate of 1-2 lbs. per acre, but this is a very slow method of establishment and should only be done where large areas are being put



Subterranean Clover.

SUBTERRANEAN CLOVER—(Continued)

down and it is quite impossible to scratch up the surface of the soil. Any sort of surface scratching will amply repay in the quicker establishment of the Clover, but for quickest results the land should be heavily scarified and good seed sown at the rate of 2-3 lbs. per acre with not less than 1 cwt. per acre of Superphosphate. In the higher rainfall districts (see article on Grasses) Perennial Ryegrass, or some other more suitable grass, should be introduced by a thorough late summer cultivation which, if done carefully, will not affect the Subterranean Clover at all; in fact, it will improve it. The main thing to remember is to let the Subterranean Clover seed itself down before starting to cultivate and not to cultivate too deeply—in most cases one to two inches should be ample. If one of the Ryegrasses is sown in this manner it will make very heavy growth the first year, and may tend to keep the Subterranean Clover down, but this is due to the stored up nitrogen; and in the second year the pasture will start to settle down, and within about three years the paddock should be a really first-class pasture comprising 30-40% Clover, and the balance the best of grass. Under these conditions the stock-carrying capability of the paddock should be approaching its fullest capacity, and care should be taken to see that the paddock is not allowed to go back through lack of phosphates. While it is quite reasonable to consider about 1 cwt. per acre of Superphosphate per annum as a good dressing on land carrying about two sheep per acre, heavier dressings should be considered when the capacity of the paddocks gets up to three or four sheep, which should be quite possible under correct management, i.e., small paddocks, rotational grazing, etc.

There are now available a number of different types of Subterranean Clover, and it is most important that the correct one be selected, as they vary greatly in season of growth, amount of production, and suitability to climate, etc. It is only possible to grow Subterranean Clover in the lighter rainfall districts under 20 inches per annum, by picking the early flowering types, and in districts where the rainfall is high and the spring lasts into December, it is possible to plant varieties which will grow for a much longer period, and consequently give green feed for about a month longer than the earliest flowering types. These late maturing types are much leafier and give a higher production right through their growing period than the earlier maturing types, so that the farmer in a late district is losing a large amount of feed every year if he sows the early type, whereas a farmer in the lighter rainfall areas will probably have no success in establishing Subterranean Clover at all unless he picks the earlier type. We give below descriptions of the various types, and where our clients have any difficulty whatever in making a choice, we urge them to write us, giving full particulars of their soil, climate, etc., so that we can help them. At the present time, we are able to offer three distinct strains:—

DWALGANUP EARLY MATURING W.A. TYPE—YATES' SPECIAL "EARLISTRAIN" GOVERNMENT CERTIFIED.—This is the earliest flowering strain in commerce, and is most suitable for districts of light rainfall and short season. We recommend its use in the Southern districts of Australia, i.e., approximately anywhere south of Sydney, where the average annual rainfall is less than 20-22 inches and the spring comes in early, and in the northern parts of N.S.W. where the average annual rainfall is somewhere between 20-30 inches, according to altitude and incidences of the rainfall. It is a rather sparse-leaved type with long runners. One point in its favour is that the percentage of fibre to leaf is rather higher than the later flowering types, and usually there is less trouble from bloat and diseases, such as Pulp Kidney, etc. The strain we offer is seed certi-

SUBTERRANEAN CLOVER—(Continued)

fied by the West Australian Government to be of the correct type, and the trueness to type is carefully checked by us before sending out.

SUBTERRANEAN CLOVER YATES' A.Y. No. 1 SUPERGRADE MID-SEASON MT. BARKER TYPE.

—This is the strain most largely used, and is suitable for all districts south of Sydney with an average annual rainfall of not less than 20-22 inches, and in the better rainfall areas of the Northern Highlands of New South Wales where the rainfall is not less than about 30 inches. It lies midway between the early strains and the late strains in regard to leafiness, has long runners which quickly spread over the ground, and for this reason this type would probably cover the ground quicker than any other. This variety will start into growth with the first good autumn rains, and will keep growing right through until about the end of November. We are now offering Mid-season Subterranean Clover in both Govt. Certified and uncertified seed. Govt. Certified seed is grown in paddocks that have been inspected by a Departmental Officer and is certified as being true to strain. This certification does not in any way cover the quality of the seed as far as its freedom from weed seed and foreign matter is concerned. The uncertified seed is carefully examined by us to see that there is no admixture of other strains. This we are able to tell by the fact that practically all different varieties have a characteristic colour and we are able to identify very accurately the difference between seed of the Dwalganup Early Maturing Type and the True Mid-season Mt. Barker Type.

This is most important, as large quantities of mixed Dwalganup Early and Mid-Season Mount Barker Type have been sold in the past as pure Mid-Season Mount Barker Type Subterranean Clover, and which have been sown by farmers in good faith with consequent economic loss owing to the smaller leaf production of the early type and its quicker maturity. When comparing prices of Yates' Subterranean Clover with others, bear this in mind, and if buying Yates' Subterranean Clover, make sure that it is in Yates' metal sealed bags with our name on the seal.

TALLAROOK GOVERNMENT CERTIFIED LATE VICTORIAN TYPE FROM ORIGINAL PASTURES.

—This variety matures about a fortnight later than the Mid-Season Mount Barker strain. It carries a higher proportion of leaf than the Mid-Season, and the runners are relatively short. It makes a very dense growth of exceptionally high fodder value, and will not mature until about middle December. It is suitable for districts with a late spring and under those conditions will give the paddock a higher carrying capacity than any of the earlier types. The seed we stock is certified as to strain by Victorian Department of Agriculture.



Perennial Ryegrass and Subterranean Clover.



A paddock of N.Z. Certified White Clover shut up for seed.

WHITE CLOVER

(*Trifolium Repens*)

White Clover is one of the most important perennial species in the Permanent Pasture, indeed a predominant Perennial Ryegrass-White Clover sward is undoubtedly the highest producing green pasture available and the very best combination for standing up to conditions where the stocking per acre is of the heaviest and feeding the most constant. Like Perennial Ryegrass, the ideal conditions for growth of White Clover occurs where there is a maximum of stocking. This is simply explained by the fact that White Clover revels in rich soil containing the maximum of humus and with plenty of consolidation and hoof culture given by the continual tramping of the animals. Provided the management is right in the way of proper spelling at reasonable intervals, the heavier White Clover is fed off and the more stock that tramp over it, the better.

Owing to its adaptability and the differences in the strain, White Clover will grow successfully over a very wide range of climates. The best perennial forms have a very long season of growth, extending from about March and continuing right through the turn of the year and under cool conditions well into late Summer. Obviously to grow this good type at its best, it must have a long season of fairly regular and adequate rainfall, but it will stand quite hard conditions for a few months in the Summer. Within broad limits, we would suggest the most perennial forms of White Clover should be sown and could be expected to give high results in climates where the rainfall is not less than about 26-28 inches with the season of growth extending into December or January. When the climate falls below that suggested above, it becomes wise to consider using some of the other forms of White Clover and therefore the descriptions given below of the different strains should be read very carefully. With White Clover it must be realised that all forms are good for their particular circumstances and it is not a matter of one strain being better than another, but rather of one strain being more suitable for certain conditions than another.

One of the main things with White Clover is to have soil of high fertility, and regular top-dressing with Superphosphate is one of the best ways of ensuring this. In the higher rainfall districts one of the first improvements that shows up when top-dressing with Superphosphate is carried out is the increase in the amount of White Clover showing in the paddocks. As a nitrogen-producing plant, White Clover stands very high, and, provided a good stand of it can be established on a paddock, there is no difficulty whatever in growing the very best of grasses in combination. Heavy stocking suits White Clover, as the animal droppings and hoof cultivation all tend to

WHITE CLOVER—(Continued)

increase the soil fertility and soil compaction which is so suitable for White Clover and Perennial Ryegrass.

White Clover grows spontaneously in most of the better rainfall districts of Australia, but the best New Zealand types are more perennial and give a longer season of growth into the summer than the natural strains in our pastures. When sowing down Perennial Ryegrass in any of the better rainfall districts the seed of the best New Zealand strains of White Clover should be included in the mixture.

The various strains of White Clover vary greatly in their perenniality, season of growth, time of flowering, and amount of feed return over the growing period. The quickest growing and most annual type is European or White Dutch strain. Most of the plants in this strain are of the early flowering annual type, heavy seeding and quick growing. This strain has the advantage in that, being early flowering, it can take advantage of a rather short spring season to grow and seed itself down each year, but being an annual form, it takes good rains to start it off in the autumn or spring, and frequently, if the rain does not come just at the right time, it may not appear in any great amount for several seasons. Frequently a year is described as being a "good White Clover" year or a "bad White Clover" year. This is due to the fact that the annual types of White Clover must have rains in the late spring or early winter to shoot them away when in the late spring, round about October, the paddocks are covered with the white flowers; but if the rains do not come, the Clover hardly appears at all.

The best New Zealand strains are much more perennial in type, and the roots carry over from year to year. They are thus able to shoot away in the cool season with much less rain than the annual forms and get into quicker growth. The best New Zealand strains also grow much more vigorously with a much higher percentage of leaf than the annual European strains, and therefore give a much larger percentage of feed, but undoubtedly the New Zealand strains will not thrive in as dry and as uncertain a rainfall as the annual forms, so that both have their place.

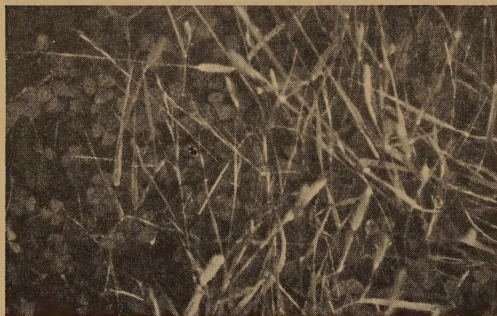
Much investigation has been made in England and New Zealand into the different types of White Clover and as in the case with Perennial Ryegrass it was very quickly found that New Zealand had something outstanding in their perennial types of White Clover, which appeared to be far and away ahead of anything else which has been found in other parts of the world. Although originally introduced from Europe, New Zealand conditions have developed a particularly high perennial form of White Clover which in addition to perenniality has gained the ability to produce a very large body of feed. The best English types although just as perennial and possibly requiring a little less fertility in the soil, are very low growing types and produce a compara-

WHITE CLOVER—(Continued)

tively small amount of feed in comparison with those found in New Zealand.

The scientists have been inter-breeding and cross-breeding single plants and have now evolved even better forms, so that to-day we are able to list three separate types of New Zealand White Clover, all of them good.

NEW ZEALAND CERTIFIED PEDIGREE WHITE CLOVER is seed originally taken from a selected type of New Zealand No. 1 Mother White Clover and specially grown as plant selections. It gives a longer season of growth, starting earlier in Spring and carrying much later into Summer and stands up to frost better, which is the main reason of its earlier start in the Spring. In New Zealand trials, the feed production of Pedigree Seed in the Summer, late Autumn and Winter, was from 40% to over 100% more than best Certified Mother Seed. The biggest difference occurred in the Winter time which is the most important as in White Clover country it is Winter feed that is always most scarce. Very small quantities of this seed are available so far, as generally speaking what is becoming available is being used for laying down further seed areas, which will be Certified as Mother Seed so as to improve the New Zealand Certified Mother Type; but we have made arrangements for a small quantity to be available this coming Autumn and to our friends in good rainfall areas where highest production is wanted, we expect to have this to offer.



White Clover and *Phalaris tuberosa*.

NEW ZEALAND CERTIFIED WHITE CLOVER

—This strain contains the best natural New Zealand types at present available, being very perennial in form. The plant is a thick, swarding, leafy type, starting into growth early in Autumn and growing right through into late Summer. To obtain the best pasture in districts where growth can be expected up to about the end of the year, undoubtedly this is the type of White Clover to use and in conjunction with Ryegrass will form the highest producing pasture capable of not only maintaining itself but actually improving under the heaviest of stocking, provided the pasture is kept well fed with the correct type of artificial fertiliser. For best results this clover should be grown on high fertility soil. Where Subterranean Clover has been grown for some years and has built up soil fertility so as to make the land capable of carrying a good Ryegrass sward, this type of White Clover should be gradually introduced, provided the paddock is in a high rainfall climate. It will compete well with the Subterranean Clover and give a much longer season of growth to the paddock.

There are two strains of Certified New Zealand White Clover, **NEW ZEALAND CERTIFIED MOTHER SEED** and **NEW ZEALAND CERTIFIED PERMANENT PASTURE**. The difference between the two is a matter of degree, both are the one type. New Zealand Mother Seed contains such a high pro-

WHITE CLOVER—(Continued)

portion of the true type that the seed can be used for laying down seed crops for the production of Certified Permanent Pasture Seed. It is always a good deal more expensive than Certified Permanent Pasture and is seldom used in laying down of ordinary pastures. If something better than Certified Permanent Pasture Seed is required, we would suggest that Certified Pedigree Seed be used, and so get the very best.

YATES' BEST NEW ZEALAND CERTIFIED PERMANENT PASTURE—This is the usual quality of New Zealand Certified Seed used for sowing down of Permanent Pastures and in our opinion is the best to use except under very special conditions. Under all trials it stands out as very true to type. Provided it is sown on country of fair rainfall and fair fertility, it gives wonderful results, particularly in combination with Ryegrass as mentioned above.

YATES NEW ZEALAND SUPERFINE—This has been the standard White Clover for many years, but now that Certified New Zealand White Clover is available, those requiring a good New Zealand type should insist on getting Certified New Zealand Seed. Practically as all the good type of New Zealand seed saved is Certified, uncertified seed can be now classed as definitely inferior in perennality to New Zealand Certified Seed. New Zealand Superfine Uncertified can be classified as a free flowering, free-seeding type, fairly perennial, which will give excellent Spring feed and is ideal for sowing on country where the hot Summers are too dry to carry perennial types through. Where the rainfall is less than about 26-28 inches and the Spring stops about November or early December, we recommend this type of clover to be used. It is a good practice, and one we recommend, to sow in borderline climates some of this type as well as the Certified Seed, which will give a pasture of mixed, long-growing types and quick-growing, free-seeding types, able to carry through the long, dry periods, as the dropped seed will come away with the next favourable conditions.

CHOICE EUROPEAN WHITE DUTCH—This is the least perennial type of White Clover. It is inferior in that it stops growth earlier in Summer and is even more free flowering with a less body of feed. Under hard conditions where the annual type of White Clover is required and where the season is too short for Subterranean Clover, this type of White Clover is to be recommended. It is particularly good for Northern conditions where Spring rains are most uncertain. We specially recommend its use in the better rainfall areas of Queensland.

VICTORIAN DINGEE IRRIGATION WHITE CLOVER CERTIFIED BY VICTORIAN GOVERNMENT—This type is one which has been found on some of the Murray Irrigation Areas in Victoria and has proved very good for those conditions. Very little seed is harvested and very high premiums are asked for it. In our opinion it has little to offer in comparison with the best New Zealand strains and for our part we prefer **NEW ZEALAND PEDIGREE** as an even better type, although comparative trials of these two types have, we believe, not yet been made.

PERENNIAL RED CLOVER

Red Clover is probably the heaviest growing Clover used in agriculture, with the possible exception of Berseem Clover. It is a rank-growing perennial plant which makes its main growth in the late Spring and early Summer under cool conditions, flowering about February. It works in well under Australian conditions, and its great value is now widely appreciated. In the cooler Southern districts

PERENNIAL RED CLOVER—(Continued)

it is most largely used as a crop for cultivation or for temporary pastures on cultivation land frequently in conjunction with Italian Ryegrass. A combination of these two will give an enormous Winter and Spring feed, and if necessary a wonderful crop of meadow hay. The pasture will last two years, and in that period will make a vast improvement in the condition and fertility of the soil, which will show up to great advantage when ploughed up and sown to some crop. In the cooler Coastal districts this combination should be widely used for the "spelling" of the cultivation paddocks, particularly corn land, as it will renew the humus and nitrogen content of the soil and give that necessary rest period to clear out the many soil-borne diseases of the different crops, such as Root Rot in corn, etc.

Red Clover is also largely sown in pasture mixtures; it is particularly suitable for the deeper soils where Cocksfoot is likely to predominate, as it is much more suitable for deep, free soils than White Clover. Under pastoral conditions it is reasonably permanent and will last at least three or four years with odd plants showing up for a number of years after. Sowing it in a permanent pasture is very good practice, as it makes a good nurse crop for the slower-growing perennial grasses, and at the same time helps to build up the necessary nitrogen content of the soil to enable them to thrive. In the Northern parts of New South Wales, Red Clover stands out as an excellent fodder plant, as it is able to take advantage of the late Spring and early Summer rains which usually come round about November-December. In the Tablelands districts, this ensures quick Summer and Autumn feed. On the warmer Coastal areas Red Clover is largely sown early in the year round about February-March; with the normal Summer rains the Clover gets a good start, and will keep growing right through the Autumn and Winter. If decent spring rains are received, it will keep on growing right into the warm weather, and is proving one of the most important Winter and Spring feed crops for those localities.

When using Red Clover alone as an annual crop or temporary pasture, it should be sown at the rate of about 10 lbs. per acre. If Italian Ryegrass is used, sow about 3-5 lbs. Red Clover and 15-17 lbs. Italian Ryegrass per acre. In permanent pasture mixtures from 1-3 lbs. should be included in practically all pasture mixtures, particularly in the Northern districts in the better rainfall areas.

Like most of the Perennial Clovers, the different strains of Red Clover vary a good deal in type and perenniality. The outstanding strain in perenniality, growth, long-growing period, etc., is the New Zealand strain; so outstanding is its superiority that usually we do not keep the European type. Occasionally, when European seed is very much cheaper, we carry small stocks, which are available for customers, but we can seldom recommend it, as it is only of advantage where the Clover is being planted strictly as a one-year crop. Even then it does not give the same amount, or long season, of growth as the New Zealand strain.

The cheaper European strains of Red Clover vary a good deal amongst themselves. The types which are saved in the far-north of Europe, notably the most northerly districts of France, Poland, and in England, are reasonably good as to perenniality and season of growth, but the types saved in southern France and Italy are mostly grown as a green manuring crop in orchards and vineyards, etc., and are the very quick-flowering, early-maturing annual forms, quite useless for fodder purposes as compared with the New Zealand type. When purchasing seed from Europe it is frequently difficult to be sure that the best Northern types are being sent. Having our own associated house in England, we are able to go

PERENNIAL RED CLOVER—(Continued)

right into the seed-saving districts and are reasonably certain of getting seed saved in those localities; but when merchants buy seed second-hand from European exporters, it is almost impossible to tell.

The strain we recommend is **YATES' SELECTED NEW ZEALAND COWGRASS**. This is purchased by us direct from the seed-saving localities in New Zealand, and is by far the best and most superior type of Red Clover available for Australian conditions. It has a long season of growth, is very perennial in form, and has a thick, leafy habit of growth, which gives a large body of feed.

During the last few years a new type has been developed and is now being saved in New Zealand under the name of **MONTGOMERY LATE FLOWERING TYPE**. This is quite an important type in New Zealand, and Government Certified seed is now available. It is an even later flowering type than the ordinary New Zealand Perennial Red Clover, which means that it will carry on even further into the summer.

By some, **MONTGOMERY RED LATE FLOWERING** is claimed to be more perennial than Selected New Zealand Cowgrass, but careful trials made in Australia have given very indefinite results in this regard, and until further trials prove this to be the case it is our opinion that for most Australian conditions, Yates' New Zealand Cowgrass is to be preferred to this strain. We would ask clients to note carefully that unless they particularly specify Montgomery Late Flowering Type, Yates' Selected Cowgrass will be sent.

EUROPEAN RED CLOVER—Large quantities of European Red Clover are regularly imported and sold in Australia. Unfortunately there is good grounds for belief that a lot of it is sold as New Zealand Cowgrass. European Red Clover varies a good deal according to just which part of Europe it comes from, but in all cases it differs from New Zealand Clover in that it is rather earlier flowering, has a looser habit of growth, does not give the same body of feed in Spring and early Summer and is less perennial. The very best English types of Broad Red Clover are little behind New Zealand seed in these respects, but some of the cheaper European seed differs a very great deal.

For competitive purposes we import European Red Clover, but in no circumstances do we sell it as anything else other than under that name. The type we have comes from Northern Europe and is one of the best European types, nearly, if not as good as, best English, but we only recommend it to buyers who must buy cheap clovers for sowing on short lease and unless particularly specified it will not be sent. Customers ordering Red Clover without specifying which type, will always receive from us **YATES' SELECTED NEW ZEALAND COWGRASS**.



Yates' Selected N.Z. Cowgrass. The best type of Red Clover.

BURR OR "NATIVE" TREFOIL

(Medicago Denticulata)

This is now one of the commonest plants in the inland grazing areas of N.S.W., and furnishes a tremendous amount of feed. It grows with the first good autumn rains, giving a heavy yield of lush green fodder throughout the winter and spring. With the approach of summer the plant ripens off and the seed falling on the ground, then forms a most valuable and highly concentrated food. This the sheep will lick up from the ground and thrive on. Country that grows this Trefoil is essentially fattening country. The burrs are a great disadvantage in purely wool-growing country.

ALSYKE CLOVER

(Trifolium Hybridum)

In Europe, Alsike Clover is one of the most important plant constituents in low, damp meadows. It combines to a great extent the qualities of both Red and White Clover, being very perennial, upright growing, giving a big body of feed in the late spring. Generally, Australian conditions are too dry for the general use of this clover, but it has its use in rather low, damp situations in the highest rainfall areas. We recommend its inclusion in pastures in rather poorly drained situations on the South Coast of New South Wales and the high rainfall areas of Victoria and the Southern States, particularly where the soil itself is fertile.

SUCKLING CLOVER

(Trifolium Minus)

Probably one of the commonest quick-growing annual Trefoils. It grows close to the ground, giving good bottom feed in the early spring and is valuable for land which does not naturally grow White Clover. It seems adapted to poorer soils and slightly drier climates than would suit White Clover, and its very heavy seeding habit ensures continuance once it is introduced in suitable soils.

CLUSTER CLOVER

(Trifolium Glomeratum)

An annual something like Burr Clover, but thrives in rather lighter soils. It grows on hills where Burr Clover is often confined to the flats. It has no injurious burr and therefore is excellent for sheep country. It is easily introduced by scattering seed over the land when it is not too hard.

LOTUS (VARIETIES)

Lotus varieties are of great value to agriculture in that they are leguminous plants and have the ability to introduce nitrogen into the soil and generally will grow under conditions unsuitable for the true clovers. In commerce there are three main varieties.

LOTUS MAJOR (Greater Birdsfoot Trefoil)—A perennial which does best in damp soil and grows mainly in the cooler months. Lotus Major is largely used in New Zealand for breaking in new land, particularly where the country is inclined to be sour and badly drained. It is particularly recommended for these situations in the higher rainfall areas and cooler districts of Australia where it will give a large body of succulent feed and at the same time, will go a long way towards encouraging the growth of grass by putting nitrogen into the soil. In suitable situations, Lotus Major is very hardy, vigorous, and once introduced will quickly increase and spread. Lotus



White Clover at Grafton, obtained by building up soil fertility with regular top-dressing.

LOTUS—(Continued)

Major is particularly valuable in swamp country as the plant will grow right into the water and will stand a considerable amount of inundation. In the cooler districts where the rather ill-drained land is frequently covered by coarse rushes, tussocks, etc., the planting of Lotus Major is of great help in controlling and eliminating these rough plants as the vigorous growth of the Lotus Major helps to smother the tussocks, etc., and encourages stock tramping, while at the same time building up the soil fertility and encouraging the growth of the better grasses.

LOTUS CORNICULATUS (Birdsfoot Trefoil) —

This is a perennial member of the Lotus family which makes its growth in the warmer weather and is of considerable value in the more northerly parts of Australia where it can take advantage of the mid-summer rains. It is a very hardy, drought-resistant pasture plant, and is well worthy of inclusion in all grass mixtures for the northern parts of New South Wales and in Queensland where ordinary clovers are very difficult to establish owing to the dry springs.

LOTUS ANGUSTISSIMUS (Narrow-leaved Lotus)

—A hardy annual clover most suitable for planting in rough, second-class country in the cooler, high rainfall areas, particularly valuable for including in mixtures for sowing on "burns" and newly cleared land.

BURRLESS OR BUTTON TREFOIL

(Medicago Orbicularis)

This is a variety of Trefoil Clover which has attracted attention in Tamworth and other northern districts. It is very similar in its growth and appearance to our Native Trefoil or Burr Clover, but the seed is not enclosed in a burr, but in a smooth pod like a small snail's shell. However, the plant is not as hardy or as prolific as the well-known Burr Clover. It is an annual, but seeds itself so profusely that it comes up every spring, and is permanent when once introduced in suitable districts.

ENGLISH YELLOW TREFOIL (OR BLACK MEDIC)

(Medicago Lupulina)

A free-seeding perennial clover, which in practice, usually dies out each year and comes away from seed. It has proved a very strong, vigorous clover on the Northern Tablelands and North Coast of New South Wales, and is recommended for those districts and others with similar climates, particularly for second-class land. English Trefoil does not give the amount of growth of White Clover or Red Clover, but is much harder on second-class country and should be included in mixtures for that type of soil.

TRIFOLIUM CERNUUM

(Drooping Flowered or Gingen Clover)

This is an annual Clover which seeds itself down, so that once introduced it is permanent. It makes heavy growth in the autumn and winter months, and is particularly suitable for moist or even wet soils in cool climates. It will withstand a large amount of inundation during the winter months. In drier soils it is not so successful.

BERSEEM CLOVER

(Trifolium Alexandrinum)

An annual lucerne-like plant which makes its growth in the cooler part of the year. If planted early, i.e., about February, on deep, rich, alluvial soil, Berseem Clover grows very vigorously and up to four or five cuts of beautiful lucerne-like hay of very good quality can be got before the plants die off in the late spring. Berseem Clover originated in the Nile Valley of Egypt where it is sown in the rich Delta soils after the annual flood has receded. It is one of the most important crops there as it is used both for stock feed, hay, and as a rotational soil improving crop for cotton and grain. In New South Wales, Berseem Clover has proved of great importance on the deep, rich, alluvial soils of the Hunter River in and around West Maitland, and under similar conditions in mild climates it is well worth a trial as a winter green fodder crop for dairymen and as a hay crop for fodder storage. An Australian crop of Berseem Clover Seed is most uncertain and unfortunately, it seems impossible to import Berseem Clover free of Hexham Scent (Melilotus Indica). To the dairyman this is important as Hexham Scent is liable to taint milk and cream. When importation is necessary we take the greatest care regarding Hexham Scent, and all samples are submitted to the Department of Agriculture for purity test to see that they are free of this troublesome weed. The usual sowing is 8-12 lbs. per acre on a well-prepared seed bed, and it is most important to see the crop is planted early, by the middle of March at the very latest, otherwise it does not establish itself before the cold weather comes on.

STRAWBERRY CLOVER

(Trifolium Fragiferum)

An excellent variety for low, wet, swampy land, subject to floods or inundations. This plant is of trailing habit and thrives where no other clovers and very few grasses will grow, owing to the excessive moisture. If 1 lb. or so per acre is sown in suitable situations, it will spread. It is very largely grown in parts of Gippsland or where the land is swampy.

BOKHARA CLOVER

(OR WHITE SWEET CLOVER)

(Melilotus Alba)

A biennial, extremely useful for renovating and green manuring. The plant makes very big root growth, and when it dies after the second year it rots down very quickly, leaving the soil well opened up.

Bokhara can be grazed by all classes of stock, the fodder value, by analysis, being extremely high. There is practically no danger of bloat with this Clover, but it is likely to taint milk. It is an excellent honey plant.

If used as a rotation crop it can be ploughed in either the first or second year, according to circumstances. The main seeding takes place the second year, and there is little danger of the plant getting out of control.

This plant should not be grown in wheat paddocks, as the seed will taint flour. Sow 8 lbs. to 10 lbs. per acre broadcast, or 5 lbs. in drills.

TRIFOLIUM INCARNATUM

(or Crimson Clover)

An annual clover, useful as a rotational crop or for hay. It is a very quick grower and a great soil renovator. The root system is particularly efficient in producing nitrogen bacteria and therefore should be useful as a soil improver in orchards in cool, high land districts. Stock do not eat it readily when green, owing to its hairiness. A splendid variety for clover hay in cold districts. Sow 10 to 12 lbs. per acre in autumn.

BARREL CLOVER

(Medicago Tribuloides)

Barrel Clover is a comparatively new introduction. Experiments have shown that best results are obtained from heavy types of soil containing a fairly high lime content. It is an annual that seeds very prolifically and comes away each season from this seed. The plant is prostrate growing, yellow flowered and leaves are of the Lucerne type. The burr is almost spineless. Where spines do exist they are not like some other members of the Medic family, and consequently do not adhere to the wool of sheep. Barrel Clover is very persistent and survives drier conditions than most of the Medics. It is recommended to be planted in places with rainfall from 14-20 inches per year. Being a legume this clover builds up soil fertility and also responds well to Superphosphate. Besides producing spring fodder for grazing, hay or ensilage, it is an excellent dry feed for use in the Summer and Autumn owing to its very heavy seeding habit. We would be glad to have reports from any of our friends who have tried this clover.



Sheep grazing on pure Subterranean Clover, regularly top-dressed with Superphosphate

LESPEDEZAS

The Lespedezas are summer-growing leguminous plants which have created great interest and have become very popular in the Southern districts of the U.S.A. Owing to their Summer growth they have been tried out and are now proving of great interest for the Summer rainfall areas of Australia, i.e., Queensland, and in the far North of New South Wales, where the main rains occur from October-November through to May-June. In these areas the ordinary clovers are very difficult to establish, and make only poor growth, consequently it is very difficult to obtain a suitably balanced pasture with the right amount of leguminous plants in the sward. In good years, annual forms of White Clover appear, but frequently, owing to the dry Spring weather, it is hardly seen. For these conditions, the Lespedezas promise to be of great value, and are well worthy of inclusion in any pasture mixture laid down. There are two varieties available, the annual Lespedeza Striata and the perennial form, Lespedeza Sericea.

For sowing in pastures the most important is the **LESPEDEZA STRIATA**, as, although being an annual, it makes quick growth and seeds itself down each Autumn in much the same way as the annual clovers do, reappearing each summer with the first good rains; it is palatable, of good feed value, makes fairly strong growth and has a great aptitude for introducing nitrogen into the soil and so improving the quality of the grass produced in the mixture. In

LESPEDEZAS—(Continued)

trial plantings on the North Coast of New South Wales it has proved extremely promising on second-class country, particularly where Carpet Grass is taking the place of the better *Paspalum Dilatum*. Top-dressing the pasture with Superphosphate and the introduction of Lespedeza Striata holds out great promise in the control of Carpet Grass on second-class country.

LESPEDEZA SERICEA—A hardy, deep-rooted perennial which makes its growth during the summer. If allowed to grow to maturity the plants become very hard and woody, at the same time, provided it is cut before the plants mature too much, it makes very good hay and is now being largely used in the U.S.A. for this purpose. In a good season two or three good cuts of hay can be gathered in the one season. In Australian agriculture so far this plant has not been found of very great use, at the same time it holds out promise as a perennial crop in situations where it is impossible to grow Lucerne, and is well worthy of trial.

TOWNSVILLE WILD LUCERNE

(*Stylosanthes Mucronata*)

In the drier parts of Northern Queensland this plant provides leguminous feed. It ripens off and seeds as the rainless winter months advance. We are able to offer limited quantities of freshly-saved seed.

LUCERNE

KING OF ALL FODDER AND GRAZING PLANTS.

Lucerne is undoubtedly the most perennial pasture plant grown in Australia. It has demonstrated its suitability for a very wide range of climates. It has been grown successfully in Central Queensland, right through to Western Australia. No plant varies more in its adaptability and variety of uses. In the dry inland areas it has proved to be one of the most perennial plants under the harshest conditions, and when sown as low as from $\frac{1}{2}$ to 1 lb. per acre, it is capable of carrying far more stock per acre than the natural herbage. On high Hunter River Flats and similar country, it is sown at the rate of 8-12 lbs. per acre, when it yields a fine hay, giving 5-6 cuts per annum and cutting as much as three tons of most nutritious hay fodder per acre.

It was once said that no farm was complete without Lucerne, and no doubt this is largely true. As a crop to have on the farm for the cutting of regular fodder supplies, there is nothing better, and for the sheep man further west to have an area of grazing Lucerne to carry lambing ewes, to see him over grass seeding time, and to have as a stand-by in the dry pinches, it stands alone.

QUANTITY TO SOW: One of the most important things with Lucerne is the quantity of seed to sow per acre. Very careful trials have been made in New South Wales and the old idea that it did not matter how much seed was sown, as the plants would die out until the right quantity was being carried on the paddock, has been proved a fallacy. Too thick sowing of Lucerne definitely prejudices long life of the stand. Western areas getting towards the edge of the wheat belt, not more than 2-3 lbs. per acre should be sown on red soil country, while in favoured situations 4-5 lbs. is sown. As the rainfall gets higher, the quantity per acre should be increased somewhat, until eventually, on good irrigation country, 10 lbs. per acre is a good seeding. When being sown with wheat, 1-2 lbs. per acre gives quite a good grazing stand.

PREPARATION OF SOIL AND SEASON TO GROW.—Clean land is most essential if Lucerne is to be a success. Paddocks intended to be sown should be kept worked for some months before planting to kill out weeds, and should new land be chosen, already grassed, it would be a wise practice to take off some grain crop to get the soil in good order and the turf rotted down before sowing Lucerne seed; or, better still, it can be fallowed and kept cultivated. A firm seed bed is most important, the seed being so small it cannot get a grip unless soil is pressed firm around it. Seed should be lightly but completely covered, particularly if the weather is at all frosty. Some kind of brush harrow is best for this purpose,

and an improvised one by using wire netting dragged flat over the ground and weighted down with a layer of bags has proved most efficient. If possible, a light rolling would be useful for both conservation of moisture and providing a smooth surface. If seed is planted in soil that cakes readily, it would not be wise to roll; it may cause all the moisture to rise and evaporate, particularly in the case of late spring sowings when the weather has become hot, or if the surface becomes caked the young sprouts cannot push up through it. We strongly recommend sowing either in early autumn or spring, when frosts are abating. In some districts where severe winters are



Mowing Yates' A.Y. Lucerne in the Lismore district.



Lucerne—the King of Fodder Crops, ready to cut for fodder reserve. Grown from Yates' Seed on the Far North Coast.

LUCERNE—(Continued)

experienced when seed is planted in autumn, a thin seeding of Oats, sowing $\frac{1}{2}$ bus. per acre, can be sown with Lucerne; this affords protection from the frosts, keeps weeds in check and also yields light hay crop in spring. This method is particularly suitable where large areas of grazing Lucerne are being sown. On rich alluvial flats we prefer sowing without a cover crop, but the seeding should be up to 10 lbs. per acre. The grower must be guided by local climatic conditions as to whether to sow in spring or autumn. In warm coastal climates of Northern New South Wales, farmers find July is the best month to plant, as it is the only time when summer weeds are dormant and consequently Lucerne can become thoroughly established before the weeds take possession.

CARE AND MAINTENANCE.—The long life and production of a Lucerne crop depends largely upon management. Lucerne should be periodically renovated and top-dressed with Superphosphate. A strong tooth cultivator with special narrow-pointed Lucerne tines, or a rigid tine Lucerne renovator can be used and the surface torn up. The process should be done preferably in early spring. Providing the cultivator tines are narrow-pointed, no fear need be entertained about putting the machine well down into the ground. The strong roots stand a deal of knocking about. In very old stands we recommend cultivating both ways up to about 6 ins. in depth; new stands, of course, need gentler treatment.

LUCERNE FOR HAY.—Lucerne grown for hay purposes should be cut just as the plants are coming into bloom and when the new shoots from the base are sprouting. Get the hay off as soon as convenient and allow new growth to come away at once. About 4-5 weeks' good growing weather is usually all that is necessary between crops of hay. Hay should be gathered with the least possible amount of handling or exposure to weather, as the leaves easily break off if too dry, and these contain a good proportion of the weight and nutriment. The cocks should not be made too small, and they should be stacked before all the sap has dried out. Through improper handling, half the feed value of the hay may be lost. One of the best ways of handling Lucerne hay is to press and bale it straight from the paddock, and this method is largely used in old-established Lucerne districts. This method also has one outstanding advantage in the preparation of hay for market. The hay can be put into bales straight off the cocks or windrows in the paddock at a cost only slightly greater than that of stacking it as loose hay. Even if hay is stored merely for home use, we recommend baling direct from the paddock, as the extra facility, efficiency and expedition with which it can be handled more than balances the slightly higher cost of preparation.

LUCERNE FOR GRAZING.—Lucerne has proved itself as one of the most important crops for grazing, particularly in the dry western districts, where it has

LUCERNE—(Continued)

shown outstanding vigorousness of growth and drought-resistance. There are thousands of square miles suitable for growing Lucerne and which would give one good cutting of hay per year if required, and the remainder carry 2-3 times the sheep per acre as compared with the natural grasses or herbage, and would fatten them at the same time. For lambing ewes or for fattening of lambs or grown sheep, nothing can equal Lucerne. Grazing Lucerne has to be carefully managed, particularly during times of drought, and it must not then be overstocked. No plant will stand this continuously, but if properly managed it is wonderful the amount of stock Lucerne will carry, even in dry seasons. One of the best methods to follow is to allow the crop to make growth until it begins to flower or as near that stage as possible; then it can be heavily stocked and eaten down. This process can be repeated several times in a year, and if there are 3 or 4 separate paddocks to afford rotational grazing, the Lucerne will give constant feed.

LUCERNE UNDER IRRIGATION.—The main requirements are plenty of sunshine, hot summer temperature, sufficient moisture, and deep, well drained soil rich in plant food. Any porous soil with proper natural drainage will be found suitable for Lucerne under irrigation. Avoid heavy clay soils. Clay loam is quite suitable and heavier soil will yield good results if they are of such a nature that Lucerne roots can penetrate freely through the sub-soil. Seed should be sown in autumn. Spring sowing is quite possible, but plants are more delicate and require more attention, and the young spring sown plants feel the effect of the advance of summer more, not being so well established as those sown in autumn, and will possibly yield at least one cut less in the first season. The preparation of the ground is a very important factor. Plough in small lands and not round and round, for if this is done it will be found that dips will be left in the centre in which water will lie and possibly kill out the Lucerne. Always work the soil in the one direction and all work likely to effect levels must be one way. Seed should be sown after irrigation and if by any chance the ground should dry out before seed is sown, it is better to cultivate and irrigate again before sowing rather than to attempt to do so on the dried-out surface, seed being sown about 10 lbs. per acre. Seed should not be covered too deeply, and Superphosphate should be applied at the rate of about 2 cwt. per acre. After the seed is sown, the first application of water can be given when the first crop of hay is taken off the land, in order to stimulate early growth and fallow with a further irrigation as the season requires. Generally speaking, one irrigation for each crop is sufficient in the early part of the season, but as the weather gets hotter more may be necessary. When this is the case the usual practice is to irrigate a week before cutting and follow with a further watering as soon as the hay has been taken off. Do not apply a big body of water at the one time; gradual saturation is the best method.

YATES' A.Y. BROADLEAF GIANT UPRIGHT LUCERNE.

The value of Lucerne being so great, a grower must sow seed on which he can depend. For truthness to strain, vigorousness, and drought resistance, Yates' A.Y. Broadleaf Giant Upright Lucerne of genuine Hunter River Strain has proved itself supreme for all Australian conditions. We are very jealous of the quality of the Lucerne seed we supply. It is supplied in special sealed and branded bags, containing 50 lbs. seed nett weight. All the seed is selected, very heavily machine-dressed and tested for high percentage of strong and even germination. We choose our seed from dry districts, and consequently embodied in the seed is drought resistance and vigour, and the seed can be sown with confidence anywhere.

WRITE TO US FOR QUOTATIONS AND SAMPLES OF SEED.

SUPPLEMENTARY FEED

The daily provision of food for the animals cannot be met by depending on pastures only, unless the stocking is kept well below normal capacity; to carry on any sort of well-ordered programme, reserves of feed must be able to take care of shortage in periods of disappointing growth. Under the best of conditions no permanent pasture can be set out which will give the same amount of growth throughout the year, which means that under all conditions of climate there are "short" periods which can only be overcome by the wise provision of annual crops to supply supplementary feed at these times.

The wise choice of the correct supplementary crops and the working out of the correct programme is most important, as the growing and taking care of annual crops can be a very expensive business, but worked properly it is highly profitable. There is the first cost of soil preparation, manuring, seed, etc. This is best met by growing crops which will give high yield at a time when feed is at a premium. The second cost is the handling of the crop when grown. There are four essential ways of doing this. (1) The feeding off of the standing crop which is by far the cheapest and least laborious of all. (2) The saving of grain. (3) The making of hay. (4) By making ensilage.

FEEDING OFF THE STANDING CROP—We Australians are lucky in that in most parts our Winters are sufficiently mild to allow crops to be grown throughout the Winter. The coldest period has a falling off of growth, but if properly chosen, the crops will carry through without harm and will start to grow as soon as conditions improve. This allows of the growing of annual, cool season growing crops which can be fed off in the paddock at intervals throughout short-period growth. The main varieties grown are Winter grain crops such as Oats, Wheat, Barley and Rye Corn, all of which are good and the choice between them depends on conditions and the requirements. We would, however, stress the suggestion that in this country the growing of some leguminous crops with these green crops is one to be commended and used much more, as by this means the fertility of the land is kept up rather than depleted. In any case, the strict rotation of paddocks used for this purpose is very necessary and one to which we believe more consideration should be given. It is for this purpose that some of the short-lived grass mixtures, such as Italian Rye and Red Clover, etc., should be worked in as rotation crops on these areas.

THE PROVISION OF GRAIN—Grain is one of the cheapest and most easily handled forms of fodder for short periods. In most districts where inclement weather can be expected at the time of maturing, the harvesting of grain can be very difficult. To-day this has been largely overcome by the provision of easily erected bulk silos and tanks by which means grain can be kept for long periods in good condition. The growing of grain crops is one that can be done largely in conjunction with green feed, as by the choice of correct types many crops can be fed out once and then harvested for grain with satisfactory yields. Indeed, most grain crops do better with at least some grazing to control growth.

HAY—Hay is a type of fodder storage which can be done largely in conjunction with the provision of Winter green feed as most grain crops instead of being harvested for grain can be cut and made into excellent hay. While Wheat and Oats are the best grain, quite good, fair hay can be made from these.

One of the best means of controlling the growth of grass in the permanent pastures is the making of grass hay in paddocks not required for feeding off in the Spring. Provided the pasture is a good one with a proper proportion of grass and clover, grass or "meadow" hay is of very high value and moreover is of great help in the proper control of pasture growth so as to keep the sward covered for as long as possible with nutritious, short, new growth. In this connection it must be stressed that the taking of "meadow" hay from a permanent pasture tends to open the sward up, and while it is a good practice on a pasture, it should not be done regularly on the same land but only on a basis of paddock rotation.

ENSILAGE—In many ways ensilage is one of the most valuable forms of fodder storage. Admittedly it is costly in that the material handled is bulky and heavy owing to the high moisture content and the means of storage calls for some capital outlay in the way of silos or pits, or whatever is used; but ensilage provides feed which is much more succulent than any other and is of undoubted advantage to the dairyman in keeping up his milk returns.

Silage is undoubtedly the best way to conserve feed which in the ordinary way would become rough and unpalatable as hay, such as badly weathered grain crops which have gone down and are full of weeds and trash. The main thing to remember is that crops like Lucerne, Berseem Clover, etc., do not make good ensilage at all and are much better made into hay; but most other crops, particularly all grain crops such as Wheat, Oats, Maize, Barley, Sorghum, etc., can be made into very good ensilage.



Green Oats—Substantial fodder to keep up winter production.

So much of the expense of growing annual crops is in the preparation of the soil and in the harvesting, every effort should be made to get a high yield per acre. Do not stint the quality of the seed. Be sure you get what you want. This can only be done by using YATES' RECLEANED SEEDS in YATES' SEALED AND BRANDED BAGS. All Yates' grains are very carefully selected for correctness to type, heavily dressed and graded so that every seed is a fine, healthy grain, capable of producing a strong, vigorous plant. The brand and seal on the bag is your certificate of satisfaction.

SEED OATS

Oats are undoubtedly the outstanding annual green fodder winter grazing crop for the cooler districts of Australia. The correct varieties of Oats will give longer and more continuous grazing than any other grain crop. For best results Oats should be grown in three or four small paddocks rather than one large paddock, so that the stock can be crowded on and the crop eaten down quickly. In this way each paddock can be given reasonable time to recover and make fresh growth. Continual grazing without spelling is wasteful and not good for either the crop or the stock. In practically all conditions some fertiliser should be sown with the crop, as a general rule about 1 cwt. per acre superphosphate should be used. If a proportion of Field Peas, Vetches or Red Clover, according to climate and situation be planted with the Oats, stock will get a more balanced diet and will do better and soil fertility will be kept up; where Red Clover is used the late Spring and early Summer grazing will be increased and good stubble feed can be expected during the following Autumn.

The importance of sowing good seed for crops of green fodder as well as grain is now beyond question. The main cost of an annual crop is the cost of cultivating the land, and every endeavour must be made to get the most out of the area sown; ten acres of really good crop is better than twice the area giving only an indifferent yield. To do this, sow only prime, plump re-graded samples, which should mean that only prime, plump seeds are sown, and, owing to the absence of straws, etc., the seed goes evenly through the drill, and a correct stand is established all over the paddock. A bad seeding means areas all over the paddock not producing anything.

The different varieties of Oats vary so much in their type of growth, ability to stand up to feeding off, and requirements of climate, etc., that it is very necessary to sow the correct variety for different conditions and requirements, and one of the most important things is to purchase Oats true to name. While naturally our Seed Oats, like all seeds, are sold under our non-warranty, we are very careful to keep the different varieties true to type and description, and farmers know just what they are getting. Yates' "A.Y." Re-machined Oats are the "very pick" of the lines available, and where necessary varieties are specially grown on contract to ensure truthness to the name and type. A lot of trouble has been caused through this difficulty in the past, and we are continually seeing samples of Oats wrongly named, and many failures are due to this trouble. The utmost care is taken by us in this respect, and all purchases are carefully checked by comparative trials in our extensive trial grounds. All samples are carefully cleaned and re-graded with our own machinery, so that every grain should produce a strong, well-nourished plant. With these samples less seed need be sown per acre.

Choice of variety to be used is largely governed by the districts, time of sowing and the use to which the crop is being put. The following list in our opinion, contains all the good varieties suitable for our grazing and cropping under different circumstances.

ALGERIAN—The standard maincrop variety for grazing hay and grain. Is very hardy, a good drought resister, and stands up exceptionally well under constant grazing. If planted early—provided it is fed down quickly and allowed to recover—it will give continuous green feed right through the late Autumn, Winter and Spring, and in many cases will give fair yields of hay or grain. In all grazing trials this variety is generally the one used for comparative tests of new sorts. If allowed to grow tall it is rather subject to rust in coastal districts. We stock two grades of this variety—Yates' "A.Y." Extra Prime for those requiring the highest quality, and No. 2 Good Re-graded for those who want a good sample but at competitive rates.

BUDDAH—An early rust-resistant variety which is very popular in New South Wales Coastal areas as a grazing proposition. While early maturing, it stands grazing off very well indeed, on comparative trials coming very close to Algerian in this respect. It is one of the best white varieties for grain, and constantly out-yields Mulga and Sunrise in the main grain-growing districts. Our stocks of this variety are all specially grown for seed purposes.

SUNRISE—A very early, strong-growing variety, moderate stooling, with very coarse straw, but extremely palatable. Sunrise does very well on the Coast, as it is very rust resistant, but it only stands up moderately well to heavy grazing, and will not recover like Algerian and Buddah. It is an excellent variety for hay in the Coastal Districts.

MULGA—An early, quick-growing white-grained variety with a fine straw and stools well. While it does quite well on the Coast and Tablelands, it is very susceptible to rust and will not recover very well after heavy grazing. In our opinion, Buddah, when available, is definitely superior for all purposes.

BELAR—A medium, early variety principally used for hay and grain and will do well in districts where the season is rather too short for Algerian; does only moderately well on the Coast and is not much used there, but inland it has been found to stand up to grazing very well.

WHITE TARTARIAN—A variety very popular in the colder districts, where it is largely used for spring planting and does better under cold conditions; it is not recommended for the warmer districts. In suitable situations it is an excellent general purpose variety.

FULGHUM—A variety recently introduced from America which is showing out exceptionally well in grazing trials on the Lower Tablelands and Western Slopes. In many cases under these conditions it has out-yielded Algerian, but for coastal conditions it seems very subject to rust and lodging and is not recommended.

IDEAL or WAIKARE—A medium early variety which stands up to heavy grazing and makes a great recovery. It is very palatable and has been quite successful on the Coast.

HEAVY WHITE—A late maturing variety only suitable for late cold districts with a good rainfall.

BARLEYS

Barley is the earliest of the grain crops to mature, and in this earliness lies also its great value as a green fodder crop. It is one of the sweetest fodders grown, and is relished by all classes of stock. Sow about two bushels per acre.

WHITE SKINLESS—The earliest variety, and very valuable for its quick growth. It affords two cuttings, and should be grazed after each; the close feeding seems to cause it to come away with renewed vigour.



Harvesting and Field Examination of Yates' Seed Oats.

BARLEY—(Continued)

CAPE BARLEY—Cape Barley is the most widely grown variety of Barley. It is excellent both for green feed and grain, grows quickly, stools very well and can be fed off several times. While hardly so quick-growing as Skinless Barley, it is very palatable and can be fed off more frequently. In the Wellington district this year, it was grown very successfully. One of our friends carried heavy stocking of sheep on a 60 acre paddock for four months during a severe drought and then got quite a good yield of grain when it was stripped.

ENGLISH—Mostly used for grain for malting.

WHEAT**Prime, Heavily Re-cleaned Samples****For Green Feed Growing**

Wheat is largely used for green fodder and for hay, as well as being the world's most important grain crop. It stands dry conditions better than almost any other grain, and is therefore of great

WHEAT—(Continued)

value for fodder and for hay. It will often give good crops in seasons when oats are a failure. The only variety we stock in quantity is **Florence**, which is of outstanding suitability for growing in Coastal Districts for green feed and hay. Florence wheat is unique for special purposes and supplies are not plentiful.

Sow up to 2 bushels per acre, together with a dressing of 56 lbs. to 112 lbs. Superphosphate per acre, according to location and quality of the land. The addition of a few pounds of Field Peas or Vetches is an advantage.

RYE CORN

Rye Corn is very hardy and most suitable for poor soils, and is largely used for winter feed, especially where the climate is severe, as it grows better in very cold weather than any other cereal. It is excellent for grazing. Stock do best while the Rye Corn is young, so it should be kept well fed down.

It will stand grazing all the Winter, and rapidly grows again after being eaten down. It is also used for mixing with Tares, the Rye Corn serving to hold the Tares off the ground. Rye Corn comes into use very early. Does well on sour land even in warm climates. It is also sown to advantage mixed with Rape. The straw is very valuable for thatching, and some farmers sow the headlands of their hay paddocks with Rye Corn for thatching the stacks. Sow about two bushels to the acre.

BLACK WINTER RYE—The best sort for early winter feed, strongly recommended for all grazing and stock feeding purposes.

SPRING AND SUMMER GRAIN CROPS

Most Permanent Pastures after an early Spring flush growth remain dormant until early Autumn, and naturally it is most important that there be some supplementary crop grown during the Summer. Those who can cut crops and feed out will find great value in Maize and Sorghums and other such crops which can be grown in drills to allow inter-row culture so as to preserve moisture and gain maximum yield. For grazing Japanese Millet and Sudan Grass are best. It is wise to arrange a succession of sowings at successive dates to extend the flush of green fodder right through the Summer—a most important point—to ensure a good bulk for making silage or other forms of fodder reserve.

MAIZES

Maize is an essential fodder for the dairyman. It is used mainly in two ways: first, for green feed; secondly, as a grain fodder. In both cases its value has been proved. The variety of maize a farmer would choose when sowing depends entirely on the purpose he has in mind. If required for green feed or ensilage, the types ensuring heavy growth should be chosen. If required for grain, the grower will choose according to conditions of soil and climate—(see detail descriptions next page).

Maize requires fertile, well-worked soils, and, as with all fodder crops, Maize will respond remarkably well to the application of fertilisers. The rate per acre applied is controlled by the fertility of the soil, but it is usually about 1-2 cwt. per acre. For Grain Production, Maize is usually sown from 8-15 lbs. per acre, according to variety. For Green Fodder, when in drills (which is the best method), use from $\frac{1}{2}$ -1 bus. per acre; broadcasted, $1\frac{1}{2}$ -2 bus. per acre may be used. Fifty-six pounds of Maize equals one bushel.

MAIZES—(Continued)

Without maize the farmer often experiences a great shortage of green feed in the late Summer and Autumn. He can also prepare for the coming Winter as the grain and green material can be stored and used during those months when the growth of the usual pastures is at its lowest. It is one of the outstanding Summer-growing crops, both for grain and green feed, and should form part of the routine of all farms where it can be reasonably well grown; it is one of the highest yielding crops known.

Our Seed Maize is practically all grown specially for us by experts who use the greatest care in the selection of stock seed, so as to keep the varieties true to type, uniform, and high-yielding. Every year, careful selection of stock seed is made, in many cases with the co-operation of the Department of Agriculture, so that the seed we offer is virtually pedigree seed of high-yielding strain for the type named. In addition, care is used to eliminate, as far as possible, Maize diseases, but these are so widespread that it is not possible to guarantee seed to be entirely free of all seed-borne diseases, and although every care is being taken in this respect, we do not give any undertaking that the seed is free. Our careful selection for vigour, trueness to type and high-yielding qualities means that farmers will get a much more even stand and larger crops than with ordinary Maize. In addition, all Yates' Seed Maizes are thoroughly cleaned, graded and tested for germination, but they are not "topped and tailed." The thorough grading eliminates all small grains, but the irregular ones from the ends of the cobs are of exactly the same blood as the rest of the cob, and will produce the same true type when grown; experts are all agreed on this, and we therefore consider it unnecessary to add to the expense by "topping and tailing."

MAIZES—(Continued)

Our list of varieties of Seed Maizes covers practically all types and consists of proved sorts for Grain Production, Green Fodder and Silage, being a wide range of early, mid-season and late varieties. Most other varieties of Maize are local selections from these types.

VARIETIES IN ORDER OF IMPORTANCE

FITZROY (OR IMPROVED YELLOW DENT)—The most important variety we list, a maincrop, large, yellow dent which, under good conditions, will out-yield any other variety. Being late maturing, it requires a long season, and does best on deep alluvial land, but will grow well on all good-class country. It is one of the best for green feed or ensilage, yielding a very high tonnage per acre. In the coastal Maize districts it is the most popular yellow variety for grain.

HICKORY KING—A large, round, white Maize, particularly hardy, specially on second-class light country, where it will out-yield other varieties. While the yield of grain on better-class soils may not be as large as some varieties, this Corn is in particular request on the market, and good samples always fetch a premium. For green feed, it is one of the best, being very leafy and succulent.

YATES' MAMMOTH WHITE ENSILAGE—A variety recently introduced by us from America. It is extremely tall-growing, thick and succulent in the stem, giving an enormous yield of sappy, green fodder per acre; particularly useful for ensilage. The cobs are very large, with medium-sized white grain. Specially recommended for good alluvial soils in the warmer Maize districts.

EARLY WHITE DAWN FLINT—Another recent introduction of ours; under good conditions it will mature ninety days from sowing, particularly recommended for Summer feed, as it grows quickly a fine, long, succulent stalk. The cobs are excellent for roasting. The grain is of a pearly white flint character, and yields a heavy crop for such a quick maturer.

SMALL LEAMING—One of the best general purpose Maizes, gives a heavy yield of rather small, yellow grain, and is one of the best varieties under hard conditions, recovering well from a check. It is particularly recommended for sowing on second-class or rather shallow soils.

EARLY MORN—One of the most valuable of the quick-maturing dent Maizes, the cobs are of fair size, and it gives a good yield of small, high-class market type grain; particularly recommended for the inland and Tableland districts for grain production.

WELLINGROVE (OR EARLY YELLOW DENT)—Recommended as an early grain variety for New South Wales Tablelands and Slopes. On the coast it does not seem to do as well as Funks' Yellow Dent. While chiefly grown for grain, it is sometimes used for green feed in the colder districts.

FUNKS' YELLOW DENT—A most popular early Maize; a heavy cropper, favoured both inland and on the coast. The grain of this variety is always irregular in shape, consequently the seed frequently looks rather mixed, but this is not the case, it is typical of the variety.

GOLDEN SUPERB—A variety which is now attracting very much attention. Somewhat similar to Funks' Yellow Dent in habit of growth and season, but some people consider it harder, and the grain is far more attractive, being of medium size and deep amber colour.

SILVERMINE—An early, white grain variety of exceptional quality; very hardy and outstanding for both green feed and grain. On good soil this

MAIZES—(Continued)

variety matures a very heavy crop indeed. The stalks are sappy and succulent, and it is well recommended for green feed or ensilage in all districts; as a grain crop this variety has proved a real bag filler.

60-DAY YELLOW FLINT—A very small-grained yellow flint Maize, and very dwarf growing. This Maize under test has matured in sixty days from sowing, and should be very suitable for dry climates, or those with a short season; the grain is particularly recommended for pigeon and fowl feed.

LARGE RED HOGAN—A late-maturing sort, doing best on rich, deep soil; should be planted early.

90-DAY FLINT—An old-fashioned flint variety still used in considerable quantities for green feed. It is very hardy and appears specially suitable for cooler districts, but it is not as early as its name indicates, and should be classed as a mid-season's corn.

ORDER OF MATURITY OF VARIETIES HANDLED

VERY EARLY—Early Morn, 60-Day.

EARLY VARIETIES—Wellingrove, Golden Superb, Silvermine, Funks' Yellow Dent.

MID-SEASON—Hickory King, Leaming.

LATE VARIETIES—Fitzroy, Large Red Hogan, Mammoth White Ensilage.

UPPER NORTH COAST—Early Crop: Leaming, Silvermine. Main Crop: Fitzroy, Large Red Hogan.

NORTH COAST AND TABLELAND—Main Crop: Leaming, Golden Superb.

MIDDLE NORTH COAST—Early Crop: Golden Superb, Leaming, Funks' Yellow Dent, Silvermine. Main Crop: Fitzroy, Large Red Hogan, Leaming.

CENTRAL COAST—Early Crop: Funks' Yellow Dent, Golden Superb, Hickory King, Main Crop: Fitzroy, Large Red Hogan, Leaming.

SOUTH COAST—Early Crop: Funks' Yellow Dent, Silvermine. Main Crop: Fitzroy, Large Red Hogan, Funks' Yellow Dent, Leaming.

NORTH TABLELANDS—Main Crop: Wellingrove, Funks' Yellow Dent, Silvermine, Early Morn, Golden Superb.

CENTRAL AND SOUTHERN TABLELANDS—Main Crop: Funks' Yellow Dent, Silvermine, Early Morn, Wellingrove.

NORTH-WESTERN SLOPES—Main Crop: Funks' Yellow Dent, Wellingrove, Silvermine, Early Morn.

CENTRAL WESTERN SLOPES—Main Crop: Funks' Yellow Dent, Silvermine, Early Morn.

SOUTH WESTERN SLOPES AND IRRIGATION AREAS—Main Crop: Funks' Yellow Dent, Silvermine.

VARIETIES RECOMMENDED FOR GREEN FODDER

COASTAL DISTRICTS.

EARLY VARIETIES—Hickory King, Leaming.

LATE VARIETIES—Fitzroy, Mammoth White Ensilage.

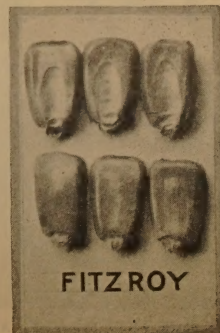
TABLELAND DISTRICTS.

WARM DISTRICTS—Fitzroy, Mammoth White Ensilage.

COOLER DISTRICTS—Hickory King, Leaming, Mammoth White Ensilage.

COLDEST DISTRICTS—Wellingrove.

WESTERN SLOPES AND IRRIGATION AREA—Fitzroy.



SUDAN GRASS

Sudan Grass is the outstanding main Summer fodder crop for tableland and inland conditions where a few useful Summer storms may be expected. Sow as early as possible in the Spring after danger from frost is over. Well fallowed land, such as wheat land, is ideal for this crop. Once the plants are through the ground and established, it will stand a great deal of drought without harm, and heat only serves to make it grow the faster, provided a modicum of moisture is present in the soil. To get the best from this crop keep it well fed down. If hand-feeding the crop, cut frequently. Sometimes the early growth appears a little weak and the stools and subsequent crops can be greatly strengthened by feeding off or mowing in the early stages. It is most economical to allow the crop to mature towards the end of the season where hay or pit silage is required; this allows the early growth to be used for the valuable grazing it gives. As Sudan Grass can be stocked very heavily indeed, it is an advantage to roughly harrow from time to time to loosen up the surface and thus let in the air and retain the moisture.

The use of Sudan Grass has been limited, somewhat due to the fear of stock poisoning. In the past there have been stock losses with Sudan Grass, but in comparison with the quantity used we consider it very doubtful if the risk with Sudan Grass is any greater than with many other crops, such as Lucerne, etc. One of the troubles in the past has been the mixture of Sorghum and the Sorghum-Sudan Hybrid Seed in imported Sudan Grass Seed. We sell only local Sudan Grass Seed which has been carefully examined for freedom from the above mixtures. Although even pure Sudan has been believed to have poisoned stock,

we consider the chance too remote to be worth much consideration, except, possibly, in the case of particularly valuable Stud Cattle and Horses. Sheep do not appear so susceptible, and we have not heard of any trouble with them.

Our Sudan Grass is Australian grown, carefully selected as regards source of supply, and subjected to expert examination. We have these experts' assurance that they have failed to detect any signs of hybrid seeds in the sample before we offer it. We thoroughly machine-dress and test to a high percentage of strong, even germination. We have built up a name for undoubted reliability with Yates' Sudan Grass, and continue the most careful supervision in our handling of this line, but in the very nature of our business, we cannot enter into any guarantee, and refer purchasers to our terms and conditions of trading as printed on our letterheads, invoices, etc. We have been greatly encouraged in our methods of handling Sudan Grass by the fact that we have never heard of trouble from stock poisoning when Yates' Selected Sudan Grass Seed has been used.

The easiest way to sow Sudan Grass is with a wheat drill, using the seed at about twelve pounds per acre. If it is difficult to set the drill to sow through the grain box, many people mix the seed with the fertiliser and sow through the fertiliser box; depth to sow is about the same as wheat, and the ground should be in much the same condition as required to sow wheat. The only difference is the time of year, because Sudan Grass must definitely not be sown until all danger from frost is over.

Samples are always available for inspection, post free.

SORGHUMS

Sorghum is one of the most valuable and adaptable crops for the dairyman, as it provides succulent, nutritious feed in the autumn and winter, when the pastures are short and hand-feeding is necessary. As the crop will stand in the paddock right into the winter without spoiling, it can be cut and fed as required, so saving such costly labour, although, if so required, they make excellent silage and give a very high tonnage per acre. While this crop well repays every care and attention, it is much harder than Maize, and will do well under harder conditions and in soils which will not grow Maize well. In the young stage, Sorghum is liable to be poisonous: it should not be used until it has matured to the flowering stage.

Many new varieties have been tested, but the following ones have generally proved best under varying conditions:



Sorghum—Supplementary Autumn and Winter fodder when pastures are short.

SACCALINE—At present by far the most popular and most used variety. It is a very hardy, mid-season sort, thriving under most conditions of soil and climate. Being rich in sugar, it has very high feeding value, and stands well into the Winter without getting too dry and pithy. It is an excellent variety for ensilage.

EARLY ORANGE—A sweet, heavy-cropping variety, hardy, slightly earlier than Saccaline, and claimed to be very drought-resistant, of high sugar content, and stands well.

PLANTER'S FRIEND—Very hardy, sweet and high yielding, but will not retain its succulence into the Winter as long as Saccaline.

WHITE AFRICAN—Favoured for its heavy cropping habit and its ability to stand right into the Winter. It is a very late maturer, and this makes good germinating seed difficult to obtain at times. We give special care in this respect, and do not stock at all, unless we can offer seed of good growth.

EARLY AMBERCANE—Very quick grower for dry conditions for quick green feed. Not recommended for retaining for winter feeding, as the stalks become dry and pithy, and have very little sugar content. This variety has been largely replaced by Sudan Grass and Japanese Millet.

GRAIN SORGHUM

Grain Sorghum is very little grown in this country. It is useful as a Summer grain crop where the land or climate is not suitable for maize. The seed is unprotected and suffers greatly from the depredation of birds, and there is no market for the grain. It is useful, however, to grow for feeding to stock and fowls on the farm. There are a number of varieties, but we usually stock Feterita or Milo.

MILLETS

As Summer fodder crops, the Millets have extreme value because of their quick-growing habit, their hardness, and the little preparation necessary for sowing. The different varieties vary a good deal, and care should be used in selecting the best variety for the use to which it will be put.

JAPANESE—This is the variety most largely used and recommended for green feed. It can be sown with a minimum amount of soil preparation, but, of course, will do better with careful preparation; it can be planted any time during the Summer as soon as danger from frosts is over, and is invaluable as a quick "catch crop" when a shortage of feed is in sight. It should be eaten off quickly and allowed to recover. If treated properly it can be fed off two or three times.

HUNGARIAN—Rather finer in the stem than Japanese, and more upright growing; it does not recover well after feeding off, and is grown mostly for making Summer hay and for its seed, which is

MILLETS—(Continued)

largely used for bird feeding, frequently under the name of Panicum.

QUEENSLAND GIANT PANICUM—A taller, stronger growing form of Hungarian Millet, and for hay purposes to be preferred; but, like Hungarian, it makes little second growth once it has been cut or fed, so that it is not so good as Japanese for grazing.

PEARL—A giant-growing form with thick Sorghum-like stems which go rather pithy when matured; does not recover well after feeding off, but is excellent for a quick-growing, heavy green fodder to be cut for cattle.

BROOM—Only used for grain and for broom making. For the latter purpose it must be grown on deep, rich soil; if interested in the growing of Broom Millet for broom making, write for special leaflet.

OTHER MILLETS are stocked for bird seed purposes, but have little value as fodders, and are not recommended for this purpose.

LEGUMES FOR FODDER CROPS OR GREEN MANURING—AUTUMN SOWING

UNDER the term Legumes are included all clovers, lucerne, etc., and the list of varieties listed hereunder, are grown alone or in association with cereals (wheat, barley, oats, rye, corn, etc.), for fodder purposes or for cover crops to be ploughed under as Green Manuring. The different varieties vary considerably in adaptability to different soils and climates. If you are in doubt which are best for your purposes write to Yates'. You must have the seed clean and of strong germination, and you must have the right variety and strain. Yates' lines are all carefully selected and thoroughly cleaned and tested.

FIELD PEAS

Field Peas are a very easily grown crop on fair class cultivation soils in temperate climates—loams and clay loams of an open nature are best. They are best sown in the Autumn or early Spring.

Peas are very quick growers, and give a good bulk for fodder or for green manuring. When grown for fodder they are best used in conjunction with a cereal such as wheat, oats, or barley—say $1\frac{1}{2}$ bus. of the cereal to $\frac{1}{2}$ bus. of Field Peas. Stock sometimes avoid Peas when they are green until they get used to them, but they always eat them readily when well wilted or made into hay.

Field Peas are very largely grown for green manuring, and may be sown in drills or broadcasted at from $1\frac{1}{2}$ bus. to 2 bus. per acre. If they are sown early they make wonderful growth throughout the Winter, and may be ploughed under in the Spring, just as the pods are setting. Frost in the Winter will kill the flower and pods, but will not prevent the vines growing.

Peas are among the best of the soil improvers; even if the roots only are ploughed under the soil is greatly enriched. A favourite method of growing Field Peas for fodder and soil enriching on coastal farms is to sow the Field Peas between the rows of late maize just prior to the last cultivation. When the maize ripens the drying leaves allow ingress of light and air, and rapid growth is made. After feeding off, the roots and top growth which has been trodden down are ploughed, and help to maintain the soil fertility for the following maize crop.

Field Peas, though not so hardy as Tares or Vetches, are earlier maturing, usually cheaper in price, and one grower reports that when grown with a cereal it will stand the trampling of grazing cattle better than will Golden Tares under similar conditions. Field Peas can be sown in the Autumn or Spring, but in mild districts we prefer Autumn sowing.

Sown alone $1\frac{1}{2}$ to 2 bushels per acre broadcast, or say, 1 bushel in drills 2 feet apart. Sown with cereal crop, try $\frac{1}{2}$ bushel Field Peas with $1\frac{1}{2}$ bushels oats or wheat per acre.

Care should be taken to sow the seed deeply enough (2-3 inches in normal soils). Superphosphate should be applied to ensure heavy yields.

GREY OR PARTRIDGE FIELD PEAS—This produces probably the heaviest amount of green stuff of all the Field Peas, and is exceptionally hardy. For green manuring or for fodder purposes in most districts it is the variety to use.

DUN FIELD PEAS—This is slightly earlier maturing than the Grey, and where Peas are grown for the grain as a rotation in wheat farming, this variety will probably be most suitable. It will ripen its seed under warmer and shorter seasoned conditions than the Grey, and is a very heavy yielder.

BLUE FIELD PEAS—This Pea is grown in very cold districts only, mainly for the grain, which is sold on the produce market as "boilers."



Grey Field Peas, North Coast, N.S.W.



The highest producing pasture possible: a Perennial Ryegrass White Clover paddock in the Spring.

TARES AND VETCHES

Used for Winter green feed and Spring hay in combination with Oats or Rye Corn. They are much hardier than Field Peas as regards severe Winters and poor soils, but do not make so much bulk. The **Golden Tare** is the variety which has been mostly used. The **Purple Vetch** (*Vicia atropurpurea*) has been coming well into favour in recent years. This variety is really outstanding. It may be grazed or cut again and again with the other Winter green feed with which it is sown, and recovers well. Of a trailing habit and vigorous growth, quite a light seeding of this Vetch will give good results. The seeds are much smaller than the Golden Tare, and will therefore sow more land weight for weight. A most valuable sort for green manuring.

Vetches are wonderful soil improvers. We strongly recommend a trial of the Purple Vetches for providing well-balanced green fodder with Oats, Rye Corn, Barley, etc., etc., or for green manuring. Sown alone, use about 30 lbs. per acre or about 15 lbs. with 1½ bushels to 2 bushels per acre of other grain. Superphosphates should always be added if there is any lack of fertility in the land. If using the Golden Tare, about 30 lbs. with a bushel of grain or up to 2 bushels sown alone should suffice.

HORSE OR TICK BEANS

A variety of Broad Beans the seeds of which form excellent feed for horses; but their main usefulness is as a Winter green-manuring crop. Sow about 2 bushels per acre if broadcasting, or, say, 1 bushel in drills. Our lines are all heavily machine dressed and tested, and less need be sown per acre compared to inferior samples.

NEW ZEALAND BLUE LUPINS

Annuals which for green manuring provide one of the best crops for ploughing in, especially in our cooler districts. They are not suitable for green feed for animals. When practicable we recommend Autumn sowing, but they will succeed if sown in early Spring. Lupins grow very rapidly and produce a quantity of top. Sow at the rate of 2 bushels per

NEW ZEALAND BLUE LUPINS—(Continued)

acre. For small trials 3 lbs. will sow an area of 100 square yards (10 yards x 10 yards). Supplies are scarce.

SOWING RAPE

YATES' "A.Y." BROAD-LEAVED DWARF ESSEX.

Sowing Rape is one of the most profitable stock fodders for fattening. In addition, it is a very useful rotation crop and soil renovator on account of its vigorous deep-rooting habit, which penetrates sub-soils to a considerable depth. It is one of the best annual fodder plants for sheep in the better rainfall parts of Australia, and with the widespread recognition of the value of combining sheep and wheat, it is now becoming very important on the wheat farm, not only for sheep feed, but also as a rotation crop for renovating wheat land. The roots of the Rape tend to break up and enliven the soil just below plough depth, and this greatly renovates the paddock. Rape is equally good for sheep, pigs or cattle, so long as it is not given in quantity to milking cows, as it is apt to taint the milk.

Sheep put on to Rape fatten very quickly; even old, broken-mouthed ewes that would starve on an ordinary pasture very soon put on flesh and are fit for the butcher. They should, however, be sent to market as soon as they are "topped off," as, if put back on the grass, they very soon lose condition again. As a means of fattening lambs, especially weaners, for market, there is nothing to equal Rape.

Rape should be eaten off heavily and "spelled"; the plants then soon recover and give a second or third crop almost as good as the first; in fact, if sown in the early Autumn it should give several months' feed.

Poultry farmers are finding a small patch of Rape a valuable asset, and for this purpose small successional sowings should be made through the Autumn and again in the Spring.

Some growers prefer to sow it with Rye Corn, say, half bushel of Rye and 2 lbs. of Rape; others sow it with mustard, using ½ lb. with 4 lbs. of Rape per acre. The inclusion of mustard corrects the occasional tendency of Rape to scour. Italian Ryegrass, about 6 lbs. per acre, does exceptionally well with Rape.

We recommend sowing in February, March or April, after the good Autumn rains, but as early as possible after the middle of February. It can also be sown with advantage in early spring, especially in the cooler districts, as it is extremely hardy. Work the land well and fine the surface. Sow seeds at from 3-6 lbs. per acre. A good method is to mix with fertiliser and sow through manure box of drill. Care should be taken to sow the seed very shallow.

Write, Wire or 'Phone Yates' for Special Quotations for Larger Quantities of Seed than Quoted in our Current Price List.

Leguminous crops are of extreme value in farming operations for enriching the soil. This is particularly the case in the warmer districts where Summer crops are largely grown, as practically all these are gross feeders and quickly deplete the fertility of the soil if green manuring crops are not being continually ploughed in. If the best use is made of the following legumes, land growing such crops as Maize, Sorghums, etc., will increase in fertility rather than go back, as is usually the case. By far the most important of the varieties listed is Cow Peas, which will grow over a wide range of districts, act as a good smothering crop for weeds, and add a great deal of nitrogen and humus to the soil. None of the following varieties should be planted until the ground is warm, and in districts where frosts occur they must be sown in time to mature before the frosts. We offer other lines of Legumes for sowing in the Autumn. These are listed in our Current Price List, and will be described in our Autumn Farm Catalogue.

COW PEAS—If sown alone, broadcast about 1 bushel per acre, or in drills from 10-15 lbs. per acre. When broadcasting with Millets, or sown between rows of Maize, 8-10 lbs. per acre should suffice.

Black Seeded—The most largely used variety, of trailing habit, and very vigorous, producing a heavy bulk of green material.

Clay Coloured—Bushy in habit and not so vigorous as the Black Seeded, and maturing rather earlier.

POONA, SMALL SEEDED—Vigorous, trailing variety, rapidly becoming very popular, but it does not appear to do so well on the sugar plantations of Northern New South Wales as the Black Seeded. Being small seeded, the rate of sowing should be about half that of other varieties.

SOY BEANS—These are not much grown in this country. Trials are continually being made, but few of them are turning out successfully. In other

SOY BEANS—(Continued)

countries, they are proving of great value, and we stock a selection of varieties for those interested. (See Yates' Current Price List for varieties.)

MAURITIUS BEANS—Of more vigorous habit than Cow Peas, and have a longer season; they are most suitable to the moist tropical areas, and are not recommended elsewhere. In the sugar cane areas they are found very useful for green manuring crops, giving a heavier bulk of feed than Cow Peas, and maturing later.

VELVET BEANS—Very similar to Mauritius Beans, and used for the same purpose.

PEANUTS—Sometimes used for Green Manure, but more often for the root nuts. For this latter purpose only grow in semi-tropical climates such as far North Coast, New South Wales. We stock three or four varieties (see Yates' Current Price List.)

SUNDRY FODDER CROPS

CABBAGE, CATTLE—In cool climates the very large, late varieties have a value as cattle feed. Sow in late Summer and Autumn in seed bed, and afterwards transplant. Sow about $\frac{1}{2}$ lb. for each acre to be planted out.

CHOU MOELLIER or MARROW KALE—Variety of Kale. Of extremely vigorous growth, and yields enormously. The leaves should be cut, not pulled off the stem, and fresh growths are then formed immediately. Sow in early Autumn, 2 lbs. to the acre, if drilled, or 1 lb. is sufficient if transplanted; the drills should be two feet apart, allowing 12 to 14 inches between the plants. Trial packets, 6d.

THOUSAND-HEADED KALE—Few plants will give so great a quantity of feed per acre as Thousand-Headed Kale, and all animals eat it greedily. These should all be sown in a seed bed, and afterwards transplanted 2½ feet between the plants and 3 feet between the rows. For the best results sow in Summer or early Autumn. Trial packets, 6d.

MUSTARD—For a quick, green fodder and corrective for fattening lambs, Mustard can be recommended. It is usually used mixed with Rape. It is ready a few weeks after sowing, and is often used as a quick, green cover crop.

SWEDE TURNIP

Swedes can be grown cheaply and with comparative ease on much of the upland country of New South Wales, not only for stock, but for the vegetable market. For sheep, they make an excellent fodder, especially as they become available during the Winter and early Spring when most needed. Sowing should be made in February, March and April at the rate of approximately 1 lb. per acre in drills about 2ft. 6in. apart. Thin out when the plants are large enough and cultivate. Great success has also attended broadcast sowings of this crop at the rate of about 1 to 3 lbs. per acre, mixed with sand or fertiliser, to ensure even sowing. The best roots may be pulled for market and the

SWEDE TURNIP—(Continued)

balance grazed with sheep or cattle. This is the cheapest method of growing Swedes, as there is no thinning out or weeding to do. A bag of Superphosphate per acre will cause considerable increase in weight and vigour of crop.

Yates' Champion Purple Top—A standard globe-shaped variety, which gives wonderful returns and is the standard sort for growing for market. Our strains are unexcelled, the crop comes in evenly and the Swedes are well shaped, large, and keep well. Also excellent for stock feed.

Yates' Monarch—A large tankard-shaped variety with purple top. Heavy yielder and good keeper. Excellent for stock or market growing.



Purple Vetch—growth made by one plant.

FIELD TURNIPS—Valuable for providing stock feed in the Winter and early Spring months. They are quick growers, especially the white-fleshed sorts. They can be planted when it is too late to sow Swedes, and will yield heavy crops. Sow about 1 lb. per acre in drills, or broadcast as suggested for Swedes. We stock the leading varieties, both white and yellow fleshed.

MANGOLDS AND SUGAR BEET

Wonderful milk producers and yield immense crops. In cool climates sow about September or October; in warm climates, such as Queensland, an Autumn sowing will give a fine Winter crop. Mangolds require rich, rather heavy soil, and they must be well cultivated and grown on without check. Sow in rows about 5 lbs. to the acre with Mangolds, 8 lbs. Sugar Beet, and thin the young plants out to about 6in. to 8in. apart in rows. The rows should be approximately 2ft. 6in. apart. Unfortunately, Mangolds are not grown to any great extent owing to the large amount of labour required in cultivation, but they yield a larger tonnage of high quality fodder than almost anything else. It has been calculated that one acre yields 30 tons crop (which can easily be expected in reasonably good ground) equal in fodder to two acres of Maize yielding 90 bus. per acre. We handle four varieties.

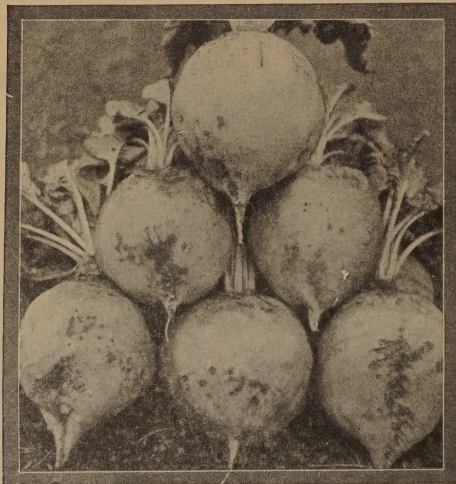
Long Red—The most popular sort, giving large, tankard-shaped roots. Needs deep soil.

Yellow Globe—Claimed to be an improved variety with a very high, dry matter content. Suitable for more shallow soils.

Half Sugar Rose and Half Sugar White—Very popular in Queensland for Autumn planting.

Sugar Beet—A variety of Mangold developed for beet sugar production but sometimes used for stock feed.

SALT BUSH—In the drier climates the Salt Bushes make excellent feed. They give good feeding during the Summer months. The creeping variety (*Semibaccata*) is coming into some prominence for sowing with *Phalaris tuberosa* in districts of good Winter rainfall but very dry Summers. Bladder Salt Bush (*Vesicaria*) is also valuable for pastures. Old Man Saltbush, if sown in selected areas makes a good drought reserve. They are easily raised from



Yellow Globe Mangold.



Swede Turnip being fed off by sheep—an excellent winter stand-by.

seed or cuttings. One pound should seed an acre. The seed appears to sprout best when sown in Winter while the ground is cool and moist.

KURRAJONG (*Sterculia Diversifolia*) — Many stock owners have to fall back on edible scrub for the stock during drought, and the foliage of this tree has considerable value, as well as being very ornamental and enhancing the value of property.

TAGOSASTE (so-called Tree Lucerne)—Suitable for hedges or break-wind and a stand-by against droughts.

MEDICAGO ARBOREA (the real Tree Lucerne) —A yellow-flowered, ornamental shrub with dense soft foliage, closely resembling lucerne. Grows 6-8 feet high, and is useful for fodder.

JERUSALEM ARTICHOKEs—Tubers of this root crop are of special value as a fodder for pigs. Farmers requiring something to build up weight in young growing pigs, and sows reduced in condition after suckling big litters, find few crops more fattening and payable than Jerusalem artichokes. The plant is hardy and will adapt itself to poorer soils, also doing exceptionally well on good potato land. Sow the same time and similarly to potatoes, using about 4 cwt. per acre. This crop can be fed when the tops have died down, and the pigs may be turned into the crop and allowed to forage for the tubers. If sufficient tubers are allowed to remain in the soil the crop will re-establish itself next season.

BUCKWHEAT—Not a cereal, but a quick-growing plant, producing large quantities of seed useful for poultry feeding, etc., also for home use as Buckwheat Cakes. It will not set seed well if subjected to hot winds. The flowers provide a good honey yield for bees.

MELONS, MIXED CATTLE—Produce a quick, heavy crop of palatable cattle fodder in warm, moist coastal districts. They make a good stand-by for pigs.

FIELD PUMPKINS—Heavy yielders, and can be stored for Winter feeding. Make excellent Winter feed for pigs.

GRAMMA OR TROMBONE PUMPKINS—As well as being a splendid vegetable sort, this variety has special feeding value for stock. They are softer than ordinary pumpkins, and can be fed to stock whole.

SUNFLOWERS—The giant variety is grown in drills like maize on rich land. The heavy crop of seeds make rich fodder, and always find a market.

COW CANE—A variety of sugar-cane which is only suitable for tropical coastal areas, and is grown for cutting for cow and pig feed. It gives a large volume per acre of succulent feed, but to give a proper ration should only be used with some concentrate, such as Bran or Lucerne Hay. There are many varieties, the one we find best being Queensland P.H. Rooted cuttings only available in season

PEAS FOR THE GREEN PEA MARKET

Where the Summer season is hot and dry, the best time to sow Peas is in the early Spring and again in the Autumn. Peas will grow during cold Winter weather, but flowers will not set, and the pods form when frosts are present. But Peas do not grow and produce a worth-while crop in the hot Summer time. Although in the general run of districts, it may be courting failure to sow Peas, say, after early October, there are cool districts of high altitude and good rainfall where crops can be sown later to yield right through the Summer.

By choosing varieties to suit a particular district and time of sowing, it is wise to consider whether the sort chosen is a very quick maturer (extra early); a medium quick maturer (early) or a main crop variety (main season). In the following list we describe these varying types.

The moisture requirement of a Pea crop is considerable, and very thorough preparation of the soil before sowing and thorough inter-row cultivation while the crop is growing, are very essential. It is also most necessary to bear in mind the plant food requirements and supply such ample superphosphates or mixed Pea fertiliser as the soil may require.

Seed is usually sown in furrow drills at round about 2 bushels per acre, and the depth covered by harrowing the same way as the drills are opened. Depth of sowing will vary somewhat according to the class of soil and time of year. In warm weather and in open soils, Pea seed may be sown three inches deep to get same into the moisture and protect from excessive heat. But in clayey soils, especially when conditions are cold and wet, a much shallower sowing is desirable. The seed will not stand water-logging, and in cold, wet clayey soils, almost a complete sowing may rot before sprouting, if the soil is not in very open, well-cultivated condition, and any water-logging in the drills takes place. When once through the ground, cultivate between the rows with a harrow-tooth cultivator, and as the crop advances, use wider and deeper tines, and when tall enough, "hillers" should be attached to the cultivator. Do not sow Peas too thinly in the rows; the plants like to grow in close association with each other, and they do not like weeds, which may be difficult to eradicate or smother out in the row if too thin a sowing is made.

In coastal districts in frost-free situations, planting may be made from March to October. The Christmas market may be catered for by planting round about the first week of October. On the Tablelands plantings are made from September to December or early January, so as to catch the Easter market.

GROWING MARKET PEAS ON STAKES

In very high quality soils where intensive production is practical, there has been some successful development of the growing of green Peas for market by supporting the vines on low brushwood or wire netting. An amazing increase of crop can be gained in this way, but the arrangement must not interfere with the necessary thorough cultivation. To properly grow tall varieties, such as Telephone, some support is necessary; but even the main-crop sort, Greenfeast, and the extra early sort, Earlicrop, do respond remarkably to the treatment.

GREENFEAST—For field culture this is the favoured main-crop variety. It is considered the main-crop type not only because of its season, but also owing to the fact that pods are of outstanding marketable quality, being long, curved, well-filled, and somewhat round. One of its greatest attributes is that it provides picking over an extended period. It is extremely hardy, and the most popular among market growers. Our experience with this variety has proved it to be one of the best for withstanding hot weather and dry spells. Seed we offer is specially contract grown in New Zealand under our own supervision from re-selected stock seed.

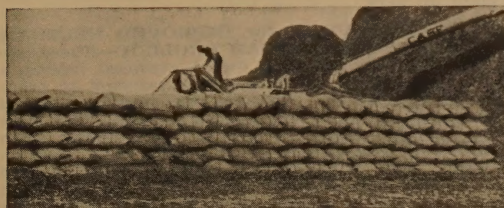
EARLICROP—This variety has rapidly come into prominence owing to its early maturing habit. We introduced it a few years ago, and it has consistently grown in reputation, until to-day it bids fair to become second only to Greenfeast in popularity. It is bred from the same blood as Greenfeast, and has the same very attractive qualities. Being a very early maturer—in fact, according to our trials, the earliest pea we have—it has a very distinct and definite value for a very quick-maturing crop when planted early, as well as when sown late; this applies especially to late Spring and also to Autumn sowings, when it can be sown to mature before the season is too late. The pods are of excellent marketable

type, somewhat similar to Greenfeast, and are of excellent quality. It is a very heavy cropper for such a quick yielder, but, of course, not as heavy as the main-crop sort, Greenfeast.

YORKSHIRE HERO—This is a variety becoming less popular as a main-crop market sort, having been superseded by Greenfeast, but nevertheless, it is a type well known on the market. Apart from Greenfeast and Earlicrop, it is probably the hardest variety. Unless, through some local conditions, it proves more valuable than Greenfeast, we would prefer Greenfeast as a main-crop, and Earlicrop as an early Pea.

ENGLISH WONDER—This variety is a dwarf-growing early Pea being very prolific. Pods are long and straight, containing a good number of peas, but they are not so favoured in the main markets as Greenfeast and Earlicrop. It is a strong, sturdy grower. Generally speaking, the growing of this Pea seems to be confined to places where there is a local demand.

RICHARD SEDDON—Richard Seddon and English Wonder are, in characteristic and description, very similar. It is a good all-round variety. For other Peas less-known on the commercial market we refer you to the descriptions in Yates' Annual.

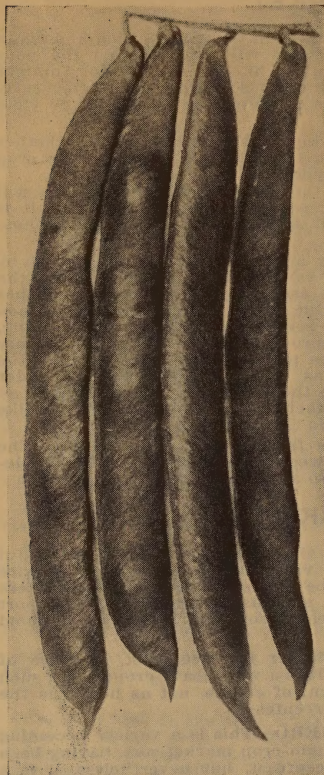


Threshing a good crop of our Garden Peas in New Zealand.



Inspecting a crop of Garden Peas to eliminate all strays and poor type plants.

BEANS FOR THE MARKET



Yates' Selected Canadian Wonder Beans.

be used, but in this case, the expense of providing proper support must be taken into account. Under intense culture on small areas, this extra expense can be well repaid by the higher yields of this excellent climbing bean.

CANADIAN WONDER—The most popular commercial variety, and one of the best general purpose sorts. It bears long, slightly-curved pods of good colour and size, is very prolific, and under good conditions will give continuous picking over an extended period. Unfortunately, it is extremely susceptible to Bacterial Blight, and, although our seed is picked from the cleanest crops available, it may cause serious trouble under adverse weather conditions, such as continuous cool, rainy conditions with winds. Wind-driven rain seems to seriously spread the infection.

STALEY'S SURPRISE—A new variety which is not yet very widely known, but is already popular in one or two districts, particularly in Southern Queensland. A medium early sort which is particularly noted for the great length of pod, often eleven inches and more when well grown; these pods are very attractive, but with any sort of a check they tend to curl badly and become very mis-shapen. Nevertheless, it is a good sort, and well worth trying under varying conditions.

BROWN BEAUTY—This variety is coming into great prominence, and is now largely used by commercial growers. It matures a little earlier than Canadian Wonder, and the pods are rather straight-

er and thicker than that variety. It will not stand so much continuous picking as Canadian Wonder. When the pods are picked at the right time, they are very attractive, and in the Sydney Vegetable Markets buyers will often pay a premium for attractive consignments of this variety. While Brown Beauty has not seemed to have suffered from Bacterial Blight to the same extent as Canadian Wonder, however, it is really very susceptible to this disease and cannot be relied on to stand up under adverse conditions in this respect. The seed of Brown Beauty will be cheaper than Canadian Wonder this season, and, as the seed is smaller, it takes less to plant an acre.

Beans are one of the most important commercial crops for Spring and Summer planting. Where no frost is experienced they are also a very valuable Autumn and Winter crop, coming in when supplies are scarce and prices good. Unfortunately, Bacterial Blight (Halo Blight) is very general with this crop, and under certain conditions has made the successful growing of Beans rather hazardous. Every effort has been made to control this trouble, but so far without any great success. The production of resistant types is being attempted and gives good promise for the future, but at present, no sorts possessing the characteristics of a good commercial variety are available showing high resistance, except New Discovery and Feltham Prolific, the former of which we strongly recommend. We exercise as much care as possible in the selection of our seed and crops to keep infection to a minimum, but we regret to say that, so far, it is impossible to offer seeds which can be claimed as absolutely free of Bacterial Blight disease.

Beans do best on good, light, friable soil, but will do well on any good-class soil, provided there has been deep, thorough preparation and good tilth is maintained with proper cultivation during the growing period. They respond well to heavy dressings of Phosphatic and Potassic manures.

In mild districts, particularly near the coast, continuous sowings can be made as soon as the danger of frost is over right up to mid-Summer, but in the hotter districts where Winter crops are grown, some difficulty will be found in growing beans in the Summer as they do not thrive under very hot, humid conditions. Throughout the year the green market fluctuates a lot, and it will be found that in most districts crops are grown for a particular period and market.

Although we list a wide range of varieties, commercial growers generally keep to a comparatively few sorts, such as Canadian Wonder, Brown Beauty, New Discovery, Feltham Prolific, Staley's Surprise, etc., which we describe more fully below, and we recommend growers of commercial areas to confine their attention to them. However, we feel we should briefly mention here another variety which is really a strain of Canadian Wonder. Burnley Wonder is a selection from Canadian Wonder originally selected by the Victorian Department of Agriculture from a field of Canadian Wonder Beans in which certain plants showed considerable resistance to Bacterial Blight. The result of this selection has produced a strain with some of the merits of Canadian Wonder and with a marked freedom from Bacterial Blight. It loses something in colour and length of pod compared to the parent strain, but we think small trials, especially in districts where Bacterial Blight is serious, are worth while. We offer small quantities of this sort in our Current Price List. We have not yet thoroughly tried out this variety, and would welcome reports from those who care to try a little. Where the area available is very small, and the maximum yield is required, a good climbing variety, such as Yates' Epicure, can be used, but in this case, the expense of providing proper support must be taken into account. Under intense culture on small areas, this extra expense can be well repaid by the higher yields of this excellent climbing bean.

NEW DISCOVERY (or IMPROVED FELTHAM PROLIFIC) and FELTHAM PROLIFIC—These two varieties are very early dwarf growers, having a nice bushy plant which is highly resistant to practically all diseases. They are very prolific, giving a good yield of rather small, straight pods. They must be picked young as the pods are very stringy when old. New Discovery is larger podded than Feltham Prolific, and, although still rather small compared with the long-podded sorts, such as Canadian Wonder, Brown Beauty, etc., they are reasonably sized for the market, and where an extra hardy early bean is required, we have no hesitation in recommending it.

TERMS OF BUSINESS.

CONDITIONS OF SALE AND NON-WARRANTY.

WE believe that all Seeds Bulbs and Roots sold by us are of the description and kind specified by us at the time of sale but owing to the practical impossibility in many cases of being certain of this we give no undertaking that such Seeds Bulbs or Roots will correspond with the description under which they are sold and we make all sales subject to this condition. We further give no warranty expressed or implied as to their growth description quality or productiveness and will not be in any way responsible for the crop. If the purchaser does not accept the goods sold to him on these terms they are at once to be returned to us and any money paid to us will be refunded.

ARTHUR YATES & CO. PTY. LTD.

PRICES.—We do not print prices in this Descriptive List, as values fluctuate, and some of our supplies have not been received into store at time of going to press. All charges are set out in our Price List of Farm Seeds current at time of booking order. The Price List now current is sent you herewith, and later issues will be posted promptly on receipt of enquiry.

DELIVERY.—We deliver Seeds on rail or wharf, Sydney, after which Seeds are on customer's account and at his risk. Orders sent by goods train are consigned carriage forward (except to unattended platforms), unless we are otherwise instructed at time of order. Delivery within the Suburban area of Sydney will be made of Farm Seeds, Seed Potatoes, Manures, and Garden Sundries, at the following rates:—Up to 14 lbs., 6d.; up to 28 lbs., 9d.; sack lots, 1/-; 2 sacks for 1/9; 3 sacks for 2/6; and 4 sacks and over at the rate of 9d. per sack.

FORWARDING INSTRUCTIONS.—Please give full and careful directions with each order and we will do our utmost to comply with them. When no instructions are received we send according to our judgment.

TERMS OF PAYMENT.—Our terms are nett cash with order (including allowance for freight if goods are required by coastal steamer or passenger train, or by goods train to unattended platforms).

SOWING CALENDAR.

Approximate times for sowing are denoted by:—

† For moderately warm climates where Oranges thrive.

* For cool climates, say where English Fruits thrive.

The most suitable times for sowing are very largely influenced by local conditions and seasons, and these and any local experience available should always be taken into consideration.

FARM SEEDS.	Jan.	Feb.	Mch.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	FARM SEEDS	Jan.	Feb.	Mch.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Artichoke, Jerusalem ..	*	*	*	*	*	*	*	*	*	*	*	*	Oats, for Grain and Hay ..	*	*	*	*	*	*	*	*	*	*	*	*
Barley, Cape and Skinless ..	*	*	*	*	*	*	*	*	*	*	*	*	Paspalum ..	*	*	*	*	*	*	*	*	*	*	*	*
Barley, English ..	*	*	*	*	*	*	*	*	*	*	*	*	Peanuts ..	*	*	*	*	*	*	*	*	*	*	*	*
Beet, Sugar ..	*	*	*	*	*	*	*	*	*	*	*	*	Peas, Field, for Fodder ..	*	*	*	*	*	*	*	*	*	*	*	*
Beet, Silver (Field) ..	*	*	*	*	*	*	*	*	*	*	*	*	Peas, Field, for Soiling ..	*	*	*	*	*	*	*	*	*	*	*	*
Buckwheat ..	*	*	*	*	*	*	*	*	*	*	*	*	Peas, for Garden ..	*	*	*	*	*	*	*	*	*	*	*	*
Canary ..	*	*	*	*	*	*	*	*	*	*	*	*	Peas, for Market ..	*	*	*	*	*	*	*	*	*	*	*	*
Carrot (Field) ..	*	*	*	*	*	*	*	*	*	*	*	*	Pumpkins ..	*	*	*	*	*	*	*	*	*	*	*	*
Cabbage (Cattle) ..	*	*	*	*	*	*	*	*	*	*	*	*	Potatoes ..	*	*	*	*	*	*	*	*	*	*	*	*
Chicory ..	*	*	*	*	*	*	*	*	*	*	*	*	Rape ..	*	*	*	*	*	*	*	*	*	*	*	*
Glover (Sorts) ..	*	*	*	*	*	*	*	*	*	*	*	*	Rye Corn ..	*	*	*	*	*	*	*	*	*	*	*	*
Couch ..	*	*	*	*	*	*	*	*	*	*	*	*	Rhodes Grass ..	*	*	*	*	*	*	*	*	*	*	*	*
Cow Peas ..	*	*	*	*	*	*	*	*	*	*	*	*	Saltbush ..	*	*	*	*	*	*	*	*	*	*	*	*
Grasses, Pasture ..	*	*	*	*	*	*	*	*	*	*	*	*	Shallots ..	*	*	*	*	*	*	*	*	*	*	*	*
Kale, Thousand Headed ..	*	*	*	*	*	*	*	*	*	*	*	*	Sheeps Burnet ..	*	*	*	*	*	*	*	*	*	*	*	*
Kale, Chou Moellier ..	*	*	*	*	*	*	*	*	*	*	*	*	Sorghums ..	*	*	*	*	*	*	*	*	*	*	*	*
Linseed (Flax) ..	*	*	*	*	*	*	*	*	*	*	*	*	Soy Beans ..	*	*	*	*	*	*	*	*	*	*	*	*
Lucerne ..	*	*	*	*	*	*	*	*	*	*	*	*	Sudan Grass ..	*	*	*	*	*	*	*	*	*	*	*	*
Lupins ..	*	*	*	*	*	*	*	*	*	*	*	*	Sunflower ..	*	*	*	*	*	*	*	*	*	*	*	*
Maize, for Grain ..	*	*	*	*	*	*	*	*	*	*	*	*	Swede ..	*	*	*	*	*	*	*	*	*	*	*	*
Maize, for Fodder ..	*	*	*	*	*	*	*	*	*	*	*	*	Tagosaste ..	*	*	*	*	*	*	*	*	*	*	*	*
Mangold ..	*	*	*	*	*	*	*	*	*	*	*	*	Tares ..	*	*	*	*	*	*	*	*	*	*	*	*
Mangold, Half Sugar ..	*	*	*	*	*	*	*	*	*	*	*	*	Tobacco ..	*	*	*	*	*	*	*	*	*	*	*	*
Millet ..	*	*	*	*	*	*	*	*	*	*	*	*	Turnip (Field) ..	*	*	*	*	*	*	*	*	*	*	*	*
Millet, Broom ..	*	*	*	*	*	*	*	*	*	*	*	*	Velvet Beans ..	*	*	*	*	*	*	*	*	*	*	*	*
Mustard ..	*	*	*	*	*	*	*	*	*	*	*	*	Wallaby Grass (Danthonia) ..	*	*	*	*	*	*	*	*	*	*	*	*
Melon, Cattle ..	*	*	*	*	*	*	*	*	*	*	*	*	Wheat, for Fodder ..	*	*	*	*	*	*	*	*	*	*	*	*
Oats, for Fodder ..	*	*	*	*	*	*	*	*	*	*	*	*	Wheat, for Grain ..	*	*	*	*	*	*	*	*	*	*	*	*

YATES' FARM SEEDS ARE CLEANED, GRADED AND TESTED.

"How and Where can I get YATES' FARM SEEDS?"

YATES' FARM SEEDS, like all other Yates' Seeds, are available through the resources of your own town. The business men stocking Yates' Seeds have Yates' current price list of Farm Seeds available at all times, and can quote you for immediate delivery on any items listed. The same service of Yates' Farm Seeds is available through other business houses in each town, who deal in Farm Seeds.



Behind this is Yates' prompt service to all their customers; most orders received are despatched the same day in just the quantities wanted by each customer. Yates' Farm Seeds are delivered free on rail or steamer, and your local wholesaler can usually give you a very close estimation of freight charges.

YATES' PACKET SEEDS, VEGETABLE SEEDS AND FLOWER SEEDS ARE POST FREE AND ARE IMMEDIATELY AVAILABLE TO YOU AT SYDNEY PRICES.

WHY ARE THEY IN SEALED BAGS ?

For your protection, all parcels of Yates' Seeds are sealed so that you can be certain that the package you receive is in its original state and you are sure of getting Yates' Reliable Seeds just as despatched. Behind the seal stands an organisation carefully built up to provide you with seeds which have been tested for germination by the latest up-to-date scientific methods in the Company's own laboratory. About ten acres of trials are grown to maturity each year to enable the Company to know the quality of the seeds they are selling. The most complete and varied cleaning and re-dressing plant in Australia is your assurance that Yates' sealed seeds are of the highest quality and free of all deleterious matter and weeds, so that you are not risking failure of "strike," and fouling of the land by sowing weeds; so a lighter sowing can be made.

ARTHUR YATES & CO. PTY. LTD.

**Suppliers of Re-cleaned
and Tested Farm Seeds.**

184-186 SUSSEX STREET, SYDNEY, N.S.W.

LETTERS—G.P.O. BOX 2707 C. TELEGRAMS—"SEEDSMAN," SYDNEY

PHONE—MA 6771 (9 LINES).